

# INDIA'S AGRI-CARBON OPPORTUNITY

Unlocking global voluntary and compliance market access for agricultural carbon credits originating from India

JUNE 2026



## **ACKNOWLEDGEMENTS**

This report was commissioned by the Gates Foundation as part of its commitment to improving the lives of smallholder farmers in South Asia, including India, who face mounting pressures from a changing climate. For these communities, whose food security and livelihoods depend on the land, climate-smart agriculture and innovative financing solutions can offer a pathway to greater adaptation and resilience.

The development of this report was led and prepared by experts from Climate Impact X (CIX), a Singapore-based global environmental markets exchange.

The findings, interpretations and conclusions expressed here represent CIX's independent analysis, and do not necessarily reflect positions or policies of the Gates Foundation.

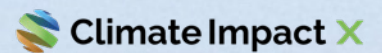


## ABOUT CLIMATE IMPACT X

Climate Impact X (CIX) is a global environmental markets exchange headquartered in Singapore, with offices in London. Established in 2021 and backed by DBS Bank, GenZero (a Temasek-founded decarbonisation investment platform), Mizuho Financial Group, SGX Group and Standard Chartered, CIX is built on institutional foundations with a long-term commitment to market integrity.

CIX operates markets for carbon credits, energy attribute certificates (EACs), renewable energy certificates (RECs) and a growing suite of environmental products. Its mission is to build connected, transparent and liquid environmental markets – bringing together project developers, corporates, financial institutions, traders and intermediaries through trusted market infrastructure to accelerate capital flow into high-impact climate solutions.

Pricing analysis in this report draws on **CIX Intelligence**, the market data and analytics arm of CIX. CIX Intelligence provides access to a curated repository of project- and contract-specific transactional data across the voluntary carbon market, sourced from market participant reporting and CIX's own trading venues. It also publishes a suite of IOSCO-aligned price benchmarks, underpinned by trade data generated through CIX Exchange's signature time-bound pricing sessions.



## EXECUTIVE SUMMARY

The agricultural sector is a central pillar of the Indian economy, employing 60 percent of the nation's workforce and contributing to about 17 percent of its GDP. But for the millions of smallholder farmers across the country, a changing climate is making that reality increasingly precarious with rising temperatures, extreme weather events and water stress.

The Gates Foundation has been working in India since 2003 to support these communities. Its rural development efforts range from advancing inclusive agricultural transformation in partnership with central and state governments – particularly in Bihar, Uttar Pradesh and Odisha – to testing innovative technologies and approaches that can improve lives and livelihoods.

One of its key workstreams seeks to understand how carbon finance can be structured to create meaningful and lasting benefits for smallholder farmers. Agricultural carbon credits from India (agri-carbon credits) are showing significant potential as a source of supply for international compliance markets, and these local communities sit at the heart of that opportunity.

This report does not examine farmer outcomes directly. Rather, it focuses on voluntary and compliance demand channels through which that potential could be realised, with particular emphasis on Singapore's compliance carbon market and the growing Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA), outlining the policy decisions and commercial levers that would help shape the viability of these pathways.

### Context & rationale

Practices such as alternate wetting and drying (AWD) – a water management technique that reduces methane emissions from flooded rice paddies – and improved nutrient management offer meaningful emissions reduction potential, but are not yet adopted at scale in India. Carbon markets, which allow companies to buy and sell verified carbon credits to meet compliance obligations or voluntarily offset their emissions, can make such practices economically attractive and commercially viable for farmers. If structured well, they not only deliver climate benefits, but directly improve lives and livelihoods.

Singapore has emerged as one of the most operationally advanced compliance markets under Article 6.2 of the Paris Agreement, the international framework that governs government-to-government carbon trading. Its carbon tax, set to rise to S\$50-80/tCO<sub>2</sub>e by 2030, acts as an effective price ceiling for the compliance market. Tax-liable entities may use eligible international carbon credits, known as

Singapore International Carbon Credits (SG ICCs) to offset up to 5% of their taxable emissions, provided Singapore has signed a bilateral Implementation Agreement (IA) with the credit's country of origin. With 11 IAs currently in place and an active government-led procurement programme, Singapore provides a structured, price-supported demand channel. An India-Singapore IA would be required to enable Indian agri-carbon credits to be sold into this market.

A second compliance market channel is emerging through CORSIA, the UN's global scheme requiring airlines to offset growth in their carbon emissions above 2019 levels. India is not participating in CORSIA Phase 1 (2024-2026), but is expected to become a mandatory participant in CORSIA Phase 2 from 2027 onwards. With a projected supply deficit of over 200 million tonnes of eligible credits through 2035, CORSIA presents a timely opportunity for new supply. For India, enabling a domestic supply of CORSIA-eligible agri-carbon credits would serve a dual purpose: supporting Indian airlines in meeting their compliance obligations and contributing to India's broader development objectives.

Against this backdrop, the following key findings and recommendations distil the report's core conclusions. The findings reflect the evidence and dynamics shaping the market opportunity, while the recommendations set out the actions most likely to advance it. Together, they provide a starting point for strategic decisions on enabling Indian agri-carbon credits to access these demand channels.

### Key findings

#### 1. Policy authorisation is the primary driver of market access and value

The exclusion of agriculture from India's list of Article 6.2-eligible activities is the single most limiting factor identified in this report. Without Letters of Authorisation (LoAs), Indian agri-carbon credits cannot access the Singapore compliance market or CORSIA, irrespective of project quality or readiness. Scenario modelling shows that access to these compliance markets alone could increase cumulative addressable market value from around \$60 million to \$546 million over 2026-2030, compared to a VCM-only addressable value of \$7 million to \$14 million over the same timeframe. This suggests that the VCM serves as a floor for value, rather than a scalable pathway on its own. On the Singapore side, the SG ICC allowance rate is the most significant policy lever influencing addressable market value.

#### 2. CORSIA presents a distinct, time-sensitive opportunity alongside Singapore's compliance market

CORSIA provides an additional demand channel<sup>1</sup> to Singapore's compliance market, with its own commercial and policy dynamics. India's mandatory participation in CORSIA

<sup>1</sup> Other compliance markets may also accept international carbon credits but are beyond the scope of this study.

from 2027, combined with the projected global supply deficit, creates a near-term opportunity for new, eligible credit supply. The potential for Indian airlines to source domestic CORSIA-eligible agri-carbon credits also provides an additional policy rationale for India to authorise agri-carbon credits under Article 6.2. Scenario modelling reflects how these compliance channels interact. In the Bear (conservative) scenario, SG ICC leads on the strength of its price-supported structure. In the Base (moderate) scenario, the two demand channels converge, with CORSIA at \$72 million against SG ICC at \$94 million. In the Bull (optimistic) scenario, CORSIA becomes the more dominant opportunity at \$358 million, as scale effects of mandatory Phase 2 participation take effect.

### **3. Agri-carbon commands a price premium, but Indian projects have historically traded at a discount**

Agri-carbon credits typically price at \$20-24/t, representing a premium relative to the broader nature-based solutions segment, with higher-integrity projects commanding further upside. Indian projects have historically traded at a discount to global peers, approximately \$6/t below the global average and \$8/t below comparable projects in other low- and middle-income countries. Pricing across this segment is driven primarily by project type and methodology, and the market remains highly varied – with prices shaped more by project-specific narratives than by standardised benchmarks. Even after adjusting for differences in methodology, a residual India-specific discount has been observed in historical data, reflecting broader concerns around credibility and market confidence. This gap is expected to narrow as Indian projects mature and establish a track record of performance and integrity.

### **4. Methodology selection is the primary commercial lever available today**

Credits approved under the Core Carbon Principles (CCP) of the Integrity Council for the Voluntary Carbon Market (ICVCM) command price premiums and are increasingly becoming a minimum requirement among quality-conscious buyers. Among the reviewed methodologies most relevant to Indian agri-carbon, Verra's VM0042 is currently the only one to have obtained CCP approval, while Verra's VM0051 and Gold Standard's AWD methodologies are under active assessment. Several agri-carbon methodologies, such as VM0042 and Gold Standard's AWD are also included in multiple Singapore IA eligibility lists, reinforcing their relevance to future compliance access. While the methodology choice alone is unlikely to address the India-specific pricing discount, it remains developers' most immediate lever for strengthening market positioning.

## **Key recommendations**

### **1. Support the inclusion of agriculture within India's Article 6.2 framework**

Adding agricultural activities within India's list of Article 6.2 eligible activities is the single most important step to enabling access to compliance markets globally, including Singapore and CORSIA. India's upcoming participation in CORSIA Phase 2 from 2027, combined with the projected CORSIA-eligible credit supply deficit, provide an additional policy rationale for authorising agri-carbon credits under Article 6.2, enabling their use for CORSIA compliance and allowing Indian aviation demand to support national development outcomes.

### **2. Advance the India-Singapore Implementation Agreement**

An India-Singapore IA is a prerequisite for access to Singapore's compliance market. Ensuring agri-carbon methodologies are considered from the outset and included as eligible methodologies will be vital to enable participation once the IA is established.

### **3. Monitor and engage on the trajectory of the SG ICC allowance rate**

The SG ICC allowance rate is a key policy lever shaping demand. Sensitivity analysis in this report shows that an increase in Base scenario SG ICC allowance rate from 5% to 10%, while holding Indian agri-carbon's market share constant at 5%, raises cumulative SG ICC value from \$53 million to \$72 million. As high-integrity, Article 6.2 authorised supply scales, the evolution of the allowance rate will have meaningful implications for market size and accessibility.

### **4. Prioritise high-integrity methodologies in project development**

Developers should prioritise CCP-approved methodologies, particularly those with CCP approval or under active CCP assessment, recognising their importance in strengthening market positioning within the VCM and enabling access to compliance markets.

### **5. Assess emerging demand pathways in the voluntary market**

While the VCM alone is unlikely to drive demand at the scale of compliance markets, it continues to play an important role. Project developers and commercial stakeholders should actively assess emerging voluntary demand pathways, including supply chain insetting and alternative buyer use cases, which may provide additional routes to market as compliance pathways develop.



# Table of Contents

## 1

### INTRODUCTION & CONTEXT

1.1. Background	9
1.2. Rationale for Singapore as a demand channel	10
1.3. Definition and scope	10

## 2

### AGRI-CARBON METHODOLOGIES COVERED

2.1. Reductions vs. Removals	13
2.2. Scope of Methodologies	13

## 3

### AGRI-CARBON METHODOLOGY INTEGRITY CONSIDERATIONS & MARKET OVERVIEW

3.1. Methodology integrity considerations	16
3.2. Global agri-carbon supply overview	17

## 4

### DEMAND CHANNELS FOR AGRI-CARBON CREDITS

4.1. Voluntary carbon market	21
4.2. Compliance carbon market	22
4.3. Article 6 of the Paris Agreement	22
• Article 6.2	22
• Article 6.4 / Paris Agreement Crediting Mechanism (PACM)	22
4.4. India Carbon Market Policies	23
• India's Article 6.2 position and agri-carbon	23
• India's Domestic Carbon Market	23
4.5. Singapore Carbon Market Policies	23
• Singapore's Carbon Pricing Framework	23
• Article 6.2 and the Singapore Compliance Market	24
• Singapore's Implementation Agreement (IA) network	24
• Agri-carbon methodology approvals across Singapore's IAs	25
• Singapore's Eligibility Criteria for ICCs	25
4.6. CORSIA	26
• CORSIA overview	26
• CORSIA as a compliance demand channel	26
• CORSIA supply constraints and agri-carbon relevance	27
4.7. Supply chain insetting	30

# 5

## PRICING BENCHMARK ANALYSIS

5.1. Objectives and analytical scope	32
5.2. Methodological approach	32
5.3. Agri-carbon positioning within the broader NbS landscape	32
5.4. Positioning Indian agri-carbon within the global market	34
5.5. Compositional drivers of agri-carbon pricing	36
5.6. Interplay of geography and project subtype in India agri-carbon pricing	37
5.7. Project-level drivers of pricing differentiation	38
5.8. Summary of key findings	38

# 6

## SCENARIO MODELLING – INDIA AGRI-CARBON ADDRESSABLE MARKET VALUE TO 2030

6.1. Scenario Framework and Policy	41
6.2. Market Channel 1: Voluntary Carbon Market	41
6.3. Market Channel 2: Singapore Compliance Market	42
6.4. Market Channel 3: CORSIA	44
6.5. Summary across Market Channels	46

# 7

## IMPLICATIONS & RECOMMENDATIONS

7.1. Pursue Article 6.2 authorisation for agricultural activities	48
7.2. Advance the India-Singapore Implementation Agreement	48
7.3. Engage Singapore on the SG ICC allowance rate trajectory	48
7.4. Prioritise CCP-eligible methodologies for new projects	49
7.5. Assess emerging demand pathways in the voluntary market	50

## APPENDIX

<b>Appendix A</b> – Methodology integrity considerations	52
<b>Appendix B</b> – Agri-carbon credit types by methodology	55
<b>Appendix C</b> – Singapore’s Environmental Integrity criteria	55
<b>Appendix D</b> – Detailed methodology for pricing analysis	56
<b>Appendix E</b> – Subtype to methodology mapping	56
<b>Appendix F</b> – Project level pricing drivers: methodology stringency and third-party ratings	58
<b>Appendix G</b> – Sensitivity analysis	59

1

# INTRODUCTION & CONTEXT



## 1.1. BACKGROUND

Globally, carbon markets – both compliance and voluntary – play an increasingly important role in mobilising finance to incentivise cost-effective greenhouse gas reductions across geographies and sectors. The fundamental principle that underpins both compliance and voluntary carbon markets is the application of a price on carbon emissions, enabling emission reductions or removals<sup>2</sup> to occur where they can be achieved most effectively. While these markets have historically operated differently and largely in parallel, some signs of convergence of the two markets are beginning to emerge, as governments explore integrating international credits within domestic carbon policy frameworks and buyers tighten their integrity requirements.

This evolving landscape has implications for the agriculture sector, which is economically and environmentally significant. Approximately half of the world's habitable land is used for agriculture,<sup>3</sup> and agriculture is also a major emitter, with food production accounting for 26% of global greenhouse gas emissions.<sup>4</sup> Unlike the industrial sector, mitigation opportunities in agriculture are closely intertwined with food security and farmer livelihoods. This is especially true for smallholder farmers, such as in India where smallholder and marginal farmers account for over 50% of the country's agricultural production.<sup>5</sup> Improvements in land management, crop planting practices and inputs used can help reduce emissions, but adoption decisions are often influenced

by perceived risk, cost and operational constraints. Consequently, well-functioning carbon markets are needed to credibly turn these improvements into outcomes that are quantifiable and verifiable, and thereby make it economically viable for farmers to undertake lasting changes.

In order for carbon markets to function as efficient channels of capital allocation, they must be credible, transparent and have high integrity. This requires mitigation outcomes from carbon projects to be measurable, additional, permanent (i.e. not reversed over time, and applicable to both reductions and removals), and governed by clear accounting frameworks. Without this, buyer confidence weakens, leading to lower prices and procurement approaches that are increasingly selective and less efficient.

Agriculture-based carbon credits (agri-carbon credits) in particular, have unique characteristics that set them apart from other carbon project types. The sector has theoretically large mitigation potential, but has faced measurement challenges, reversal and permanence<sup>6</sup> considerations, and socio-economic sensitivities, particularly in smallholder farmer systems, can present challenges. At the same time, improved agricultural practices can generate co-benefits such as enhanced soil health, improved resilience to climate variability and reduced input costs for farmers. These factors significantly influence how such credits are evaluated, priced and used within both voluntary and compliance-based markets.



<sup>2</sup> Carbon credits may represent either avoided/reduced emissions, which refer to mitigation outcomes that avoid or reduce greenhouse gas emissions relative to a defined baseline, or removals, which refer to mitigation outcomes that remove greenhouse gas emissions from the atmosphere.

<sup>3</sup> Ritchie, H., & Roser, M. (2019). Half of the world's habitable land is used for agriculture. Our World in Data. <https://archive.ourworldindata.org/20251125-173858/global-land-for-agriculture.html> (archived 25 November 2025).

<sup>4</sup> Poore, J., & Nemecek, T. (2018). Reducing food's environmental impacts through producers and consumers. *Science*, 360(6392), 987–992. <https://www.science.org/doi/10.1126/science.aag0216>

<sup>5</sup> Singh, R. B., Paroda, R. S., & Dadlani, M. (2022). Indian agriculture towards 2030: Pathways for enhancing farmers' income, nutritional security and sustainable food systems. FAO. [https://www.fao.org/fileadmin/user\\_upload/FAO-countries/India/docs/Full\\_Paper-8.pdf](https://www.fao.org/fileadmin/user_upload/FAO-countries/India/docs/Full_Paper-8.pdf)

<sup>6</sup> Permanence refers to the durability of mitigation outcomes from carbon projects over time and the management of reversal risk.

## 1.2. RATIONALE FOR SINGAPORE AS A DEMAND CHANNEL

This study focuses in particular on Singapore's carbon market as a strategically important demand channel for Indian agri-carbon credits.

Singapore has emerged as a frontrunner in developing one of the most operationally ready compliance carbon markets in Asia, integrated with Article 6 of the Paris Agreement. Singapore has signalled its intention to leverage carbon credits under Article 6 to support its efforts as it aims to achieve net zero emissions by 2050, and to reduce emissions to around 60 million tonnes of carbon dioxide equivalent (tCO<sub>2</sub>e) by 2030. Its domestic carbon tax was introduced in 2019 with incremental increases in the prevailing tax rate planned through this decade to 2030. By allowing carbon tax-liable facilities to offset a portion of their carbon tax liabilities through eligible international carbon credits under Article 6, Singapore has enabled a base of compliance buyers to emerge. In addition, the country has also been active in directly procuring Article 6 credits itself. It made its first purchase in September 2025 for over 2 million tonnes of nature-based removals,<sup>7</sup> and launched a second request for proposals for Article 6 compliant credits in October 2025.<sup>8</sup> The inclusion of agricultural carbon credits signals the role that such project types could play in Singapore's evolving carbon credit procurement strategy.

India and Singapore have long-standing economic and diplomatic ties and are also actively engaged in the development of the global carbon market.<sup>9</sup> An India-Singapore Implementation Agreement (IA) under Article 6.2 would create the overarching framework for Indian agri-carbon credits to access the Singapore compliance market, once India has authorised the relevant activities.

## 1.3. DEFINITION AND SCOPE

### AGRI-CARBON DEFINITION

For the purpose of this study, agri-carbon refers to carbon credits generated from changes in agricultural practices that either reduce or remove greenhouse gas emissions relative to defined baselines, with a focus on smallholder relevance. Within this scope, the study focuses on the following categories of mitigation activities:

- Methane reduction from rice cultivation (e.g. alternate wetting and drying);
- Improved nutrient and fertilizer management reducing nitrous oxide emissions;
- Soil carbon sequestration through changes in land and crop management.

Some mitigation activities are intentionally excluded. These include activities which may be considered ancillary to core agricultural practices or less relevant for smallholder farmers, such as:

- Carbon sequestration from biochar production and application;
- Grazing-dependent livestock management interventions;
- Industrial feed additive approaches targeting enteric methane mitigation.

It should be stressed that these exclusions do not imply lower emissions mitigation potential, but rather reflect the study's focus on project types most directly comparable within smallholder farming systems and relevant to the market dynamics examined in this paper. Some excluded activities, such as biochar and ERW, require significant upfront investment and specialised equipment not readily



<sup>7</sup> National Climate Change Secretariat & Ministry of Trade and Industry. (16 September 2025). Singapore will contract high-quality nature-based carbon credits from four projects. <https://www.nccs.gov.sg/singapore-will-contract-high-quality-nature-based-carbon-credits-from-four-projects/> — NCCS and MTI will contract 2.175 million tonnes of high-quality nature-based carbon credits from four projects in Ghana, Peru, and Paraguay, for use across 2026 to 2030.

<sup>8</sup> Ministry of Trade and Industry. (31 October 2025). Singapore launches second request for proposals for high-quality carbon credits. <https://www.mti.gov.sg/newsroom/singapore-launches-second-request-for-proposals-for-high-quality-carbon-credits/>

<sup>9</sup> Cross-border carbon credit trading was among the topics discussed at the third India-Singapore Ministerial Roundtable in August 2025 (Straits Times, 14 August 2025), indicating broader bilateral engagement on green initiatives.



accessible to smallholder farmers. Such projects also trade at price points well above the ranges observed in CORSIA or Singapore's compliance market, and are therefore not directly comparable within the scope of this analysis.<sup>10</sup>

## GEOGRAPHIC AND MARKET FRAMING

Pricing dynamics, buyer preferences and integrity signals are evaluated from a global market perspective, recognising that carbon credit prices are largely shaped by international demand conditions, comparative pricing across credit types and project categories, and buyer preferences and portfolio considerations.

Policy interpretation and practical applicability focuses on India, reflecting the study's intended relevance for smallholder agri-carbon projects assessing commercially viable monetisation pathways and potential alignment with emerging international and compliance-linked demand channels.

## ANALYTICAL APPROACH

This study relies on publicly available literature, policy documents, methodology frameworks, public and proprietary market datasets (including registry data) and primary stakeholder interviews.

Where forward-looking scenarios are presented, the discussion is supported by explicitly stated assumptions in line with prevailing market, policy conditions, and emerging market signals. These scenarios are presented for illustrative purposes only and are intended to serve as possible examples of market outcomes, rather than predictions. Three scenarios are used throughout – Bear (conservative), Base (moderate) and Bull (optimistic) – to illustrate a range of possible market outcomes.

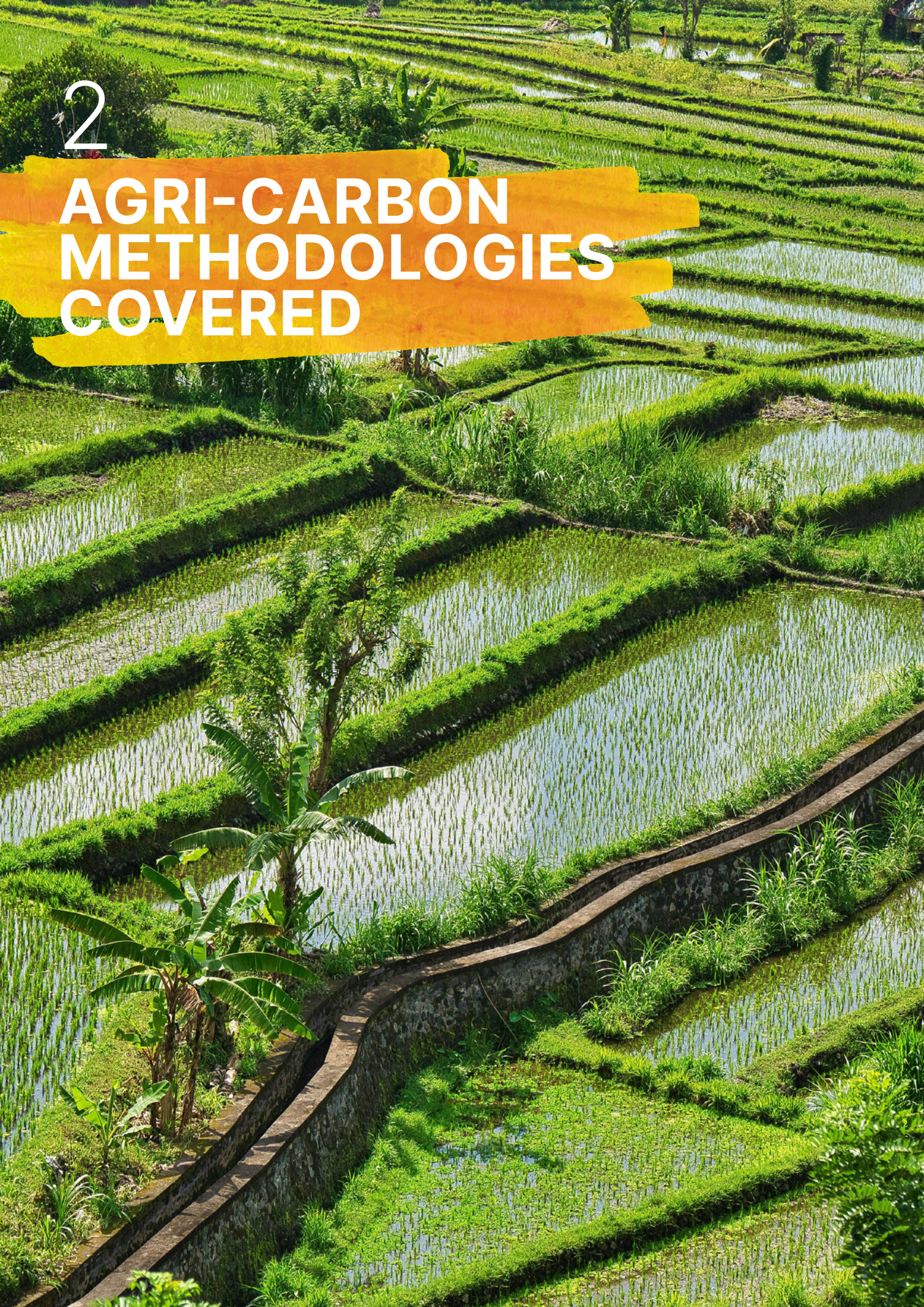
*All currency figures are expressed in US dollars (\$), unless otherwise stated.*

*All carbon quantities and prices are expressed per metric tonne of carbon dioxide equivalent (tCO<sub>2</sub>e), abbreviated throughout this report as /t, unless otherwise stated.*

<sup>10</sup> See the call-out box on ERW and CORSIA in Section 4.6 for further discussion of pricing dynamics and CORSIA eligibility.

2

# AGRI-CARBON METHODOLOGIES COVERED

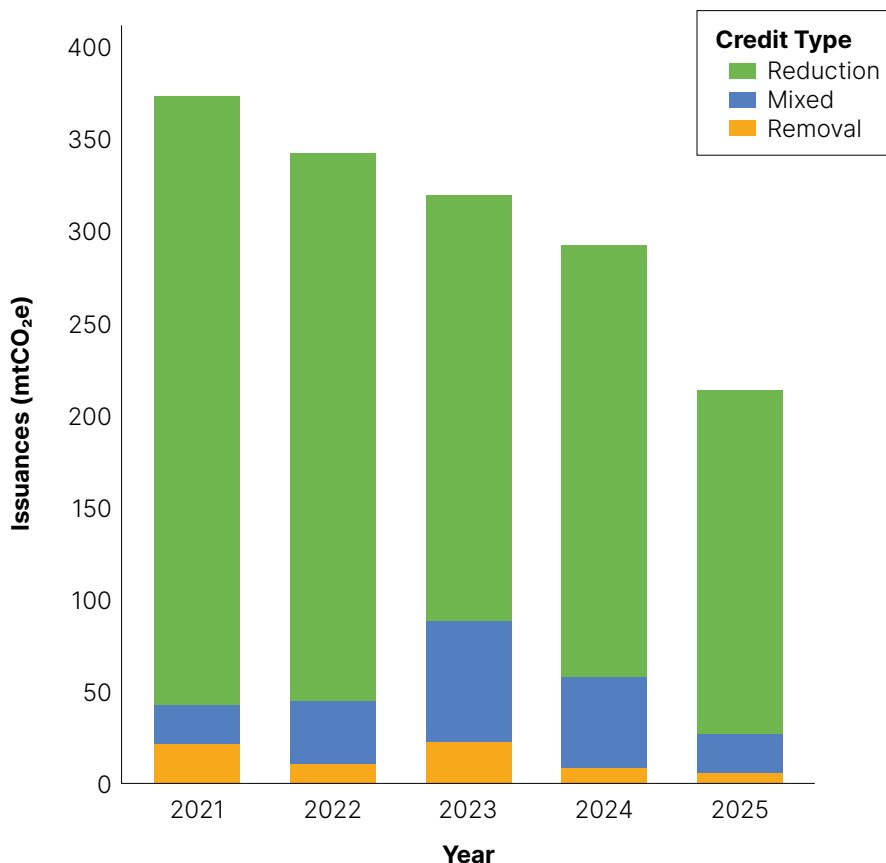


## 2.1. REDUCTIONS VS. REMOVALS

Carbon credits can be differentiated into two types – reductions and removals. Emission reductions are reductions or avoidance of greenhouse gas emissions that would otherwise have been released. Carbon removals refer to activities that remove and sequester greenhouse gases from the atmosphere.

The distinction between reductions and removals is an important factor influencing both market access and the pricing of carbon credits. Whether an underlying carbon credit represents a reduction or removal is increasingly being factored into buyer procurement decisions in the voluntary carbon market (VCM), with removals typically valued higher. This reflects their role in delivering direct removal of CO<sub>2</sub> from the atmosphere, making them more aligned with current

Chart 1. Issuances by credit type



corporate net-zero guidelines that require residual emissions to be neutralised.<sup>11</sup> Most agri-carbon projects have elements of both reductions and removals, depending on the activity and applied methodology.<sup>12</sup> For instance, the reduction of methane emissions during rice cultivation through alternate wetting and drying (AWD) practices generates primarily reduction credits, while the increase in soil organic carbon in agricultural soils yields removal credits. This contributes to the wide variance in prices observed within the agri-carbon market (explored in greater detail in section 5).

Unlike in the VCM, most compliance markets in operation today avoid tying eligibility to whether credits are reductions or removals. Under both the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA), which covers international aviation emissions, and Singapore's carbon tax framework, carbon credits must comply with a set of eligibility criteria, but are not distinguished by credit type.

## 2.2. SCOPE OF METHODOLOGIES

The study focuses on agri-carbon projects developed under active methodologies and international carbon crediting standards shown in Table 1 below. These are the main crediting frameworks currently being used to develop agri-carbon projects in India that could potentially access international demand.

Market acceptance of agri-carbon methodologies in both voluntary and compliance markets is also increasingly shaped by how well the underlying methodologies align with evolving integrity standards. Frameworks such as the Integrity Council for the Voluntary Carbon Market (ICVCM)'s Core Carbon Principles (CCPs)<sup>13</sup>, designed to set a threshold for quality in carbon markets, have become increasingly important factors guiding buyers' procurement decisions.

<sup>11</sup> For example, SBTi's Corporate Net-Zero Standard distinguishes between emission reductions and removals in how companies address residual emissions at the net-zero target date. Under the current standard, residual emissions are expected to be neutralised using high-quality carbon removals.

<sup>12</sup> See Appendix B for a classification of agricultural carbon methodologies by emissions reduction and carbon removal credits.

<sup>13</sup> Integrity Council for the Voluntary Carbon Market. Core Carbon Principles. <https://icvcm.org/core-carbon-principles/>

While CCP labelling is not mandatory in carbon markets, its assessment criteria provide a useful structure for understanding which methodology attributes are most likely to influence buyer confidence and credit tradability. In particular, additionality, baseline design, permanence and robust monitoring, reporting and verification (MRV) are key considerations that can impact over-crediting risk, project durability and thereby influence buying decisions. The table

below includes where each methodology currently sits in the ICVCM CCP assessment process.

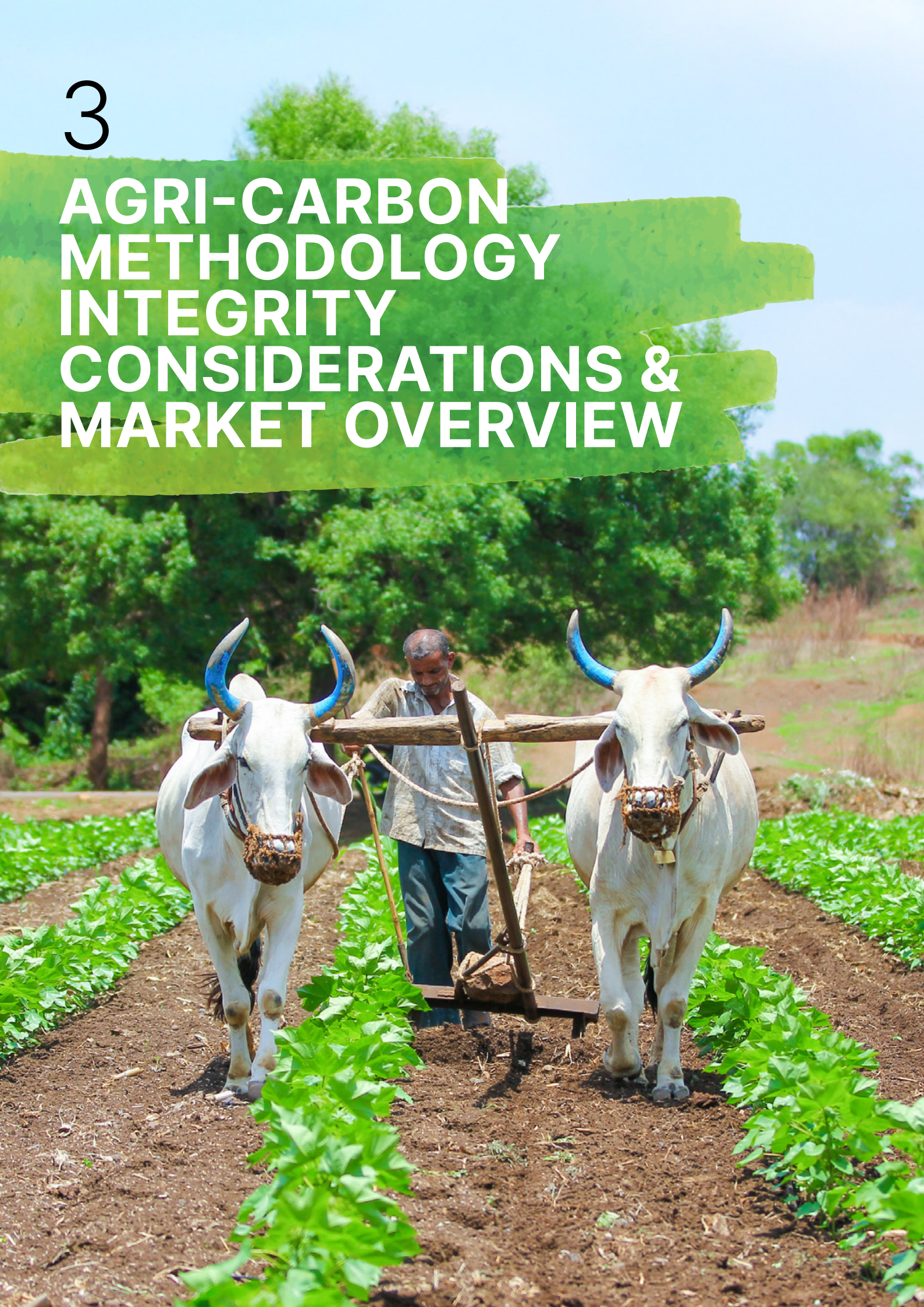
The methodologies differ materially in how they approach additionality, baseline design, and MRV, which influences both the quality of the credits and how they are received in the market.

**Table 1. Scope of methodologies in this study**

Standard/Registry	Methodology	Primary mitigation mechanism	ICVCM CCP Status
Verra	VM0042 - Improved Agricultural Land Management, v 2.0 - 2.1	Soil organic carbon sequestration	<b>CCP-Approved</b>
	VM0051 – Improved Management in Rice Production, v 1.0	Methane reduction / Alternate wetting & drying (AWD)	<i>Assessment in progress</i>
Gold Standard	GS Soil Organic Carbon Framework Methodology, v1.0	Soil organic carbon sequestration	Not yet assessed
	Methane Emission Reduction by Adjusted Water Management Practice in Rice Cultivation, v1.0	Methane reduction / Alternate wetting & drying (AWD)	<i>Assessment in progress</i>
Climate Action Reserve (CAR)	CAR U.S. Soil Enrichment Protocol (SEP), v1.1	Soil organic carbon sequestration	<b>CCP-Approved</b>
	U.S. Nitrogen Management Protocol	Nitrous oxide reduction from fertilizer use, improved agri practices	Not yet assessed
	U.S. Rice Cultivation Protocol	Methane reduction / Alternate wetting & drying (AWD)	Not yet assessed

3

**AGRI-CARBON  
METHODOLOGY  
INTEGRITY  
CONSIDERATIONS &  
MARKET OVERVIEW**





### 3.1. METHODOLOGY INTEGRITY CONSIDERATIONS

The agri-carbon methodologies covered in Section 2 vary in their approaches to key integrity considerations that impact buyer confidence, including additionality, baseline design, MRV and permanence. Differences between these methodologies are not assessed by buyers in isolation, but

are often reflected in third-party ratings frameworks. For example, BeZero Carbon<sup>14</sup> evaluates soil carbon projects across these core risk factors, including how conservative the quantification approaches are and how well reversal risks are managed. As such, methodologies used act as upstream drivers of the rating outcome, which in turn influences how credits are valued in the market.

## Digital MRV (dMRV) and its potential to reshape agri-carbon markets

Digital MRV (dMRV) refers to the use of digital technologies such as satellite imagery, machine learning and automated analytics to monitor, report and verify carbon projects on a continuous basis. Compared to traditional field-based approaches, dMRV offers several advantages:

- **Integrity:** Continuous monitoring reduces reliance on subjective assessments and enables early detection of risks such as land-use change, leakage, or reversals.
- **Efficiency:** Automated workflows significantly reduce verification time and cost compared to manual, field-heavy MRV.
- **Scalability:** Large, remote, or smallholder-based projects can be monitored without proportional increases in MRV costs.
- **Transparency:** Buyers, regulators, and stakeholders gain ongoing visibility into project performance.

dMRV effectiveness and cost are highly sensitive to regional data availability. Data-rich regions can validate models with fewer samples, while data-scarce regions require greater upfront investment in local model development, raising MRV costs and potentially increasing credit prices for buyers.

Neither CORSIA nor Singapore's compliance market currently specifies dMRV as a requirement, with eligibility assessed at the methodology level. However, standards are evolving. In CCP approval decisions for VM0042 and CAR SEP, the ICVCM Governing Board has recognised the integrity and efficiency benefits of dMRV. Similarly, Verra's VT0014 allows the use of remote sensing to estimate and monitor soil organic carbon (SOC) stock changes, subject to robust calibration, independent validation, and performance requirements.

<sup>14</sup> BeZero Carbon Soil Carbon & Agriculture methodology v2.0.

For the purposes of this report, methodologies that adopt more conservative and dynamic approaches across these dimensions are considered to be more stringent, and thus provide stronger signals of credit quality. As voluntary and compliance markets increasingly converge – both in the stringency of integrity standards applied to credits, and in the use of eligible VCM credits for compliance purposes – these distinctions are becoming more material. Compliance schemes such as CORSIA and Singapore’s carbon tax require credits to meet defined integrity thresholds, while ICVCM

CCPs are emerging as a key benchmark for quality-conscious voluntary market buyers. Methodologies that demonstrate stronger performance across these dimensions are therefore better positioned for both premium pricing in the VCM and access to compliance markets.

A detailed discussion of how these considerations are applied across specific methodologies is provided in Appendix A; Table 2 below summarises the four key integrity dimensions and their relevance to buyers.

**Table 2. Key integrity considerations for agri-carbon credits and their relevance for buyers**

Integrity consideration	Concept	Why it matters for buyers
<b>Additionality</b>	Whether carbon benefits would not have happened without carbon finance.	Stricter and more standardised additionality tests reduce the risk of credits being seen as “business as usual” (BAU). Buyers increasingly prefer methodologies with clear thresholds or periodic reassessment alongside policy changes
<b>Baseline design</b>	The BAU scenario against which any emission reduction or removal can be measured.	Weak or non-conservative baselines are a primary driver of over-crediting risk. Buyers place greater confidence in methodologies that use project-specific data, conservative assumptions, and regular reassessments,
<b>MRV and quantification</b>	How emissions or removals are measured and calculated.	Credits generated under weak MRV frameworks are more vulnerable to overcrediting. Approaches that rely on robust, project-specific data, conservative assumptions and frequent monitoring are more likely to improve the defensibility of credited outcomes.
<b>Permanence</b>	Risk that stored carbon is later released	Longer monitoring periods and stronger reversal safeguards generally increase perceived durability and value, particularly for removal credits. Avoidance credits (rice methane) are assessed differently, with permanence seen as less of a risk.

### 3.2. GLOBAL AGRI-CARBON SUPPLY OVERVIEW

Global supply of carbon credits peaked in 2021 and has been falling since, primarily due to a reduction in renewable energy projects and greater emphasis on high-integrity projects which are typically accompanied by more conservative crediting.<sup>15</sup> Total retirement in the VCM was approximately 169 million tonnes in 2025, down from 175 million tonnes in 2024, while the net surplus of credits narrowed from 116 million tonnes in 2024 to 44 million tonnes in 2025, reflective of a tightening supply-demand balance. Outside the VCM, compliance-linked credit cancellations are starting to emerge. The first substantive CORSIA Phase 1 retirements were completed in early 2026, with roughly 400,000 tonnes retired. While modest relative to projected CORSIA Phase 1 demand, these transactions mark the start of a ramp-up expected to accelerate as airlines approach the scheme’s January 2028 compliance deadline.

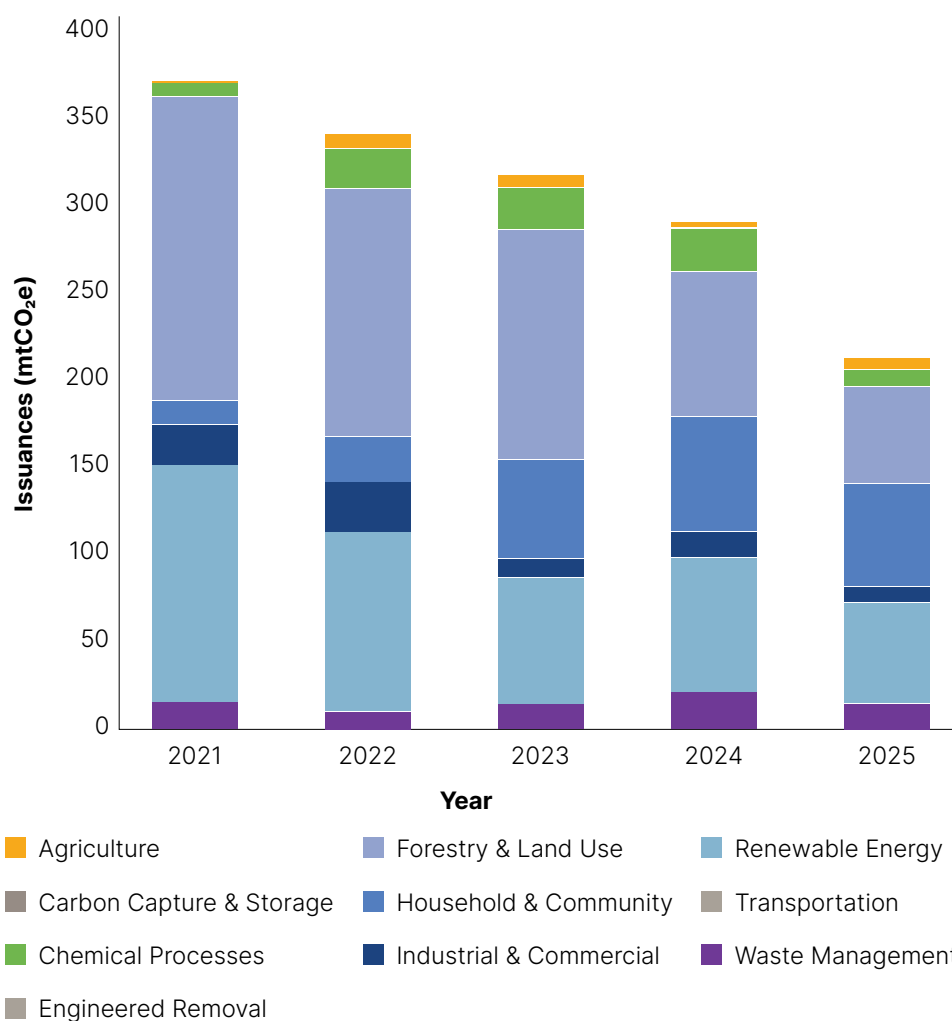


<sup>15</sup> Liu, Y., & Gurrola-Perez, P. (2025). The dynamics of voluntary carbon markets: An empirical analysis of the carbon credits lifecycle. World Federation of Exchanges.

The chart below shows global VCM issuances by project type over 2021-2025, drawing on data from leading registries.<sup>16</sup> Renewable energy, once a dominant source of supply, has contracted sharply, with issuances falling from 136 million tonnes in 2021 to 57 million tonnes in 2025, reflecting the phase-out of legacy projects and tighter additionality standards. In contrast, agri-carbon credit issuances have increased from 1.6 million tonnes in 2021 to 6.7 million tonnes in 2025, although the segment remains small, accounting for roughly 3% of total issuances in 2025. While the number of agri-carbon projects in development is growing, issuance volumes remain limited compared to other project types, reflecting the complexity of measurement, verification and project development in agricultural systems.



**Chart 2. Issuances by project type**



\*Each stacked bar displays project types in alphabetical order, listed from top to bottom.

\*\*Carbon Capture & Storage, Engineered Removal, and Transportation volumes are plotted but not visible, as they are orders of magnitude smaller than those of other project types.

<sup>16</sup> Verra, Gold Standard, ACR, Climate Action Reserve, ART TREES, Puro.earth, Cercarbono.

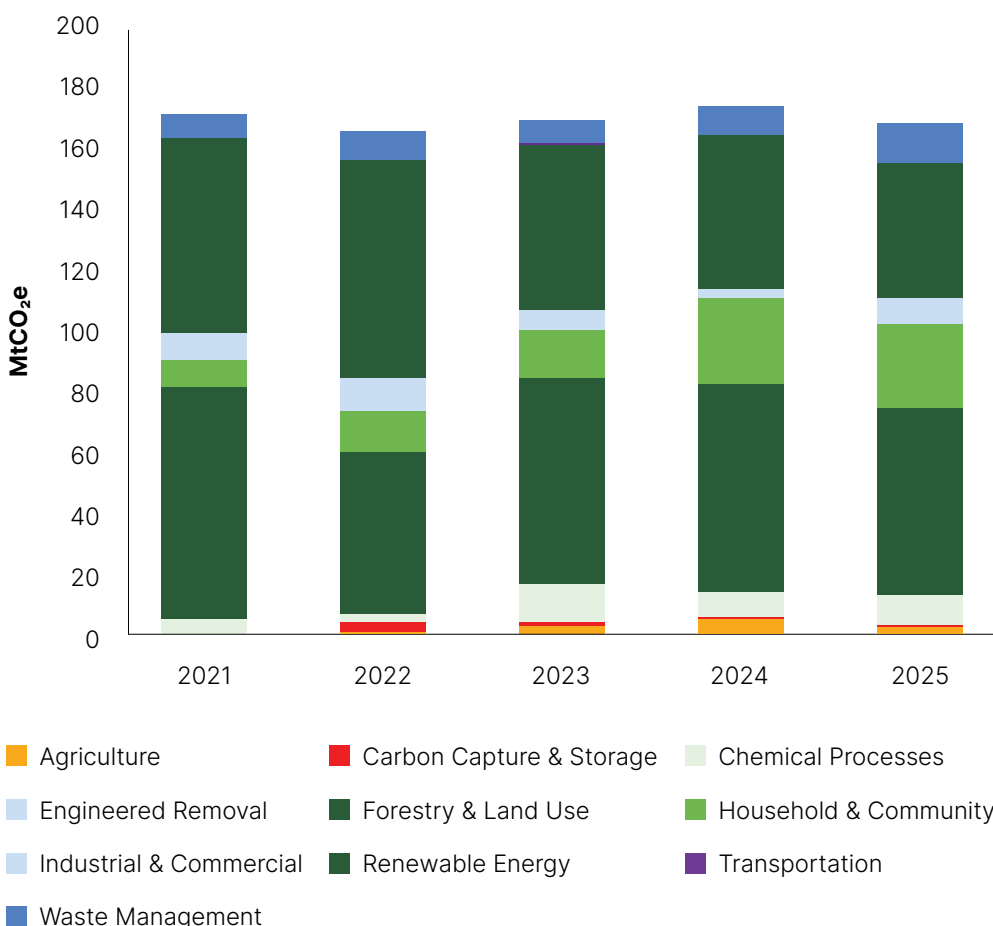
The chart below shows global VCM retirements over the same period. Forestry and land use projects have historically dominated retirement volumes, accounting for 44% of retirements in 2025, though their share has declined as integrity concerns, particularly around legacy REDD+ methodologies, have impacted buyer demand. Agri-carbon's share of total retirements grew from 0.3% in 2021 to a high of 3.2% in 2024, reflecting growing buyer interest in the segment.

The market is also shifting towards more integrity-based approaches, with 51 million credits using CCP-Approved methodologies as of November 2025. Although this represents 4% of the volume of credits issued in 2024, many of the CCP-Approved methodologies are relatively new and have yet to issue credits, and the pipeline of future supply is immense.<sup>17</sup> For example, there are 522 projects registered or in the development pipeline for CCP-Approved methodologies under biochar, sustainable agriculture, ARR, IFM or clean cooking solutions in Verra's VCS Program alone.



With the push towards high integrity in the VCM and increasing demand from compliance schemes such as CORSIA and the Singapore compliance market, Indian agri-carbon projects that can achieve CCP eligibility and/or Article 6 authorisation would be well-positioned to benefit.

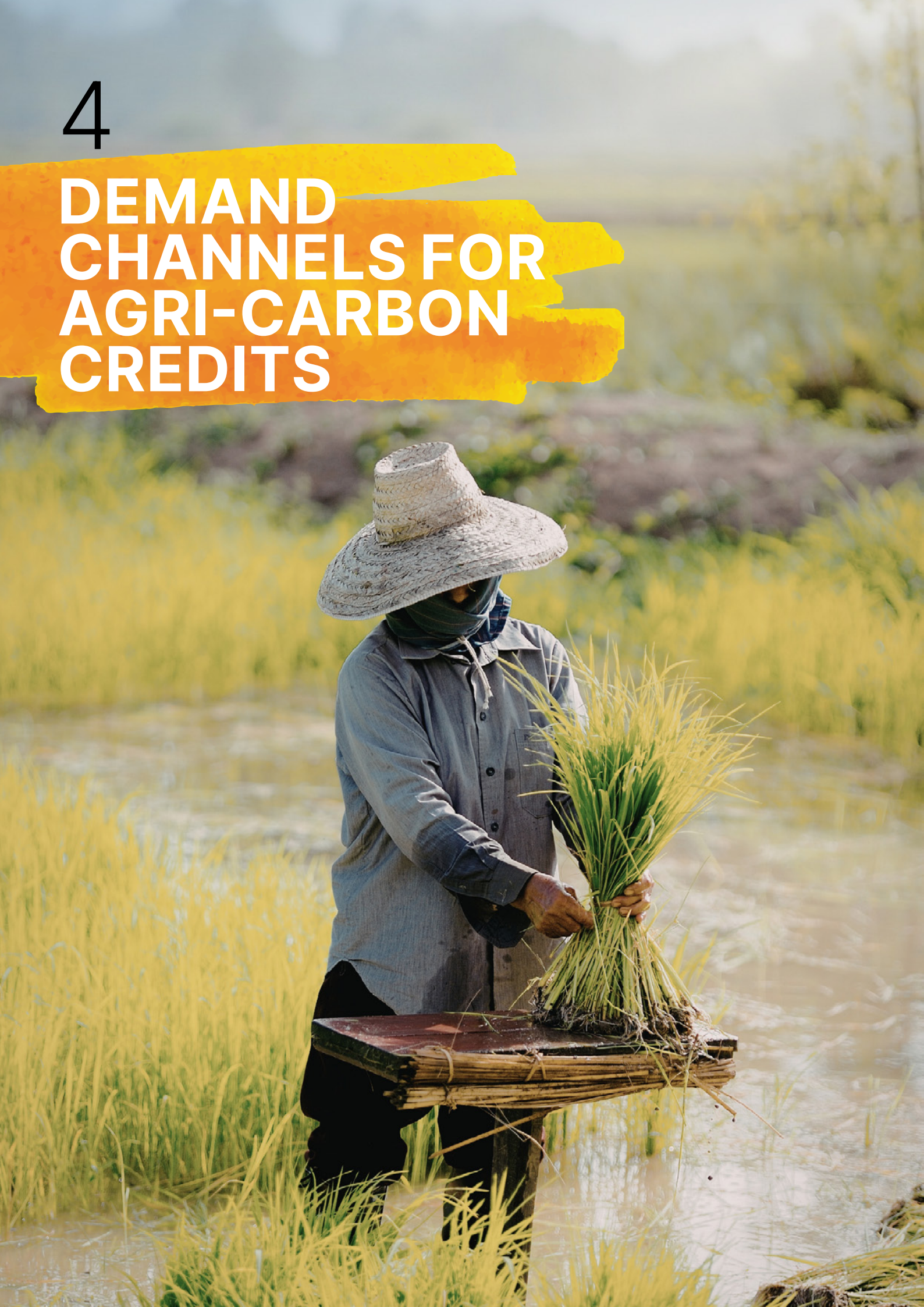
**Chart 3. Credit retirements by project type**



<sup>17</sup> Integrity Council for the Voluntary Carbon Market. (16 December 2025). Core Carbon Principles Impact Report 2025. <https://icvcm.org/wp-content/uploads/2025/12/IC-Impact-Report-2025-V7.1-16Dec25.pdf>

4

# DEMAND CHANNELS FOR AGRI-CARBON CREDITS



Demand for carbon credits, including agri-carbon credits, is ultimately driven by the underlying use case, and can broadly be grouped into two channels – VCM, where participation is discretionary, and compliance carbon markets, where participation is mandatory. The Singapore carbon tax framework and CORSIA are identified as key compliance channels for agri-carbon credits from India, as discussed in further detail below.

#### 4.1. VOLUNTARY CARBON MARKET

The VCM remains one of the largest demand drivers for agri-carbon credits globally. Buyers participate in the VCM on a voluntary basis for a range of reasons, including achieving their net zero targets, or to honour sustainability commitments made to their shareholders and/or customers. VCM demand continues to be heterogenous and driven by preferences of individual buyers, which can impact the traded volumes and prices of carbon credits.

Integrity requirements in the VCM have risen significantly since 2022. The ICVCM CCPs have increasingly become a market benchmark for quality-conscious buyers, with CCP-labelled credits commanding a premium of up to 25%.<sup>18</sup> The push for quality has been further bolstered by the growth in third-party carbon credit ratings agencies, such as BeZero Carbon, Calyx Global and Sylvera. These ratings agencies assess projects on key methodology attributes such as additionality, permanence and MRV integrity, and are being increasingly used by buyers in their procurement processes.

The Science Based Targets Initiative (SBTi) remains one of the most influential factors in spurring VCM demand. While maintaining its emphasis on direct decarbonisation, SBTi's updated draft Corporate Net Zero Standard V2.0, published in November 2025, includes the concept of Ongoing Emissions Responsibility (OER) that seeks to acknowledge companies' use of carbon credits to account for ongoing emissions across all scopes, while also requiring them to transition to a higher share of carbon removals over time.<sup>19</sup> This is expected to significantly boost demand for both reductions and removals credits, including agri-carbon credits.

VCM demand is also expected to see a boost through initiatives such as VCMI's Claims Code of Practice<sup>20</sup>, and government-backed buyers' coalitions, which are looking to encourage corporate participation in high-integrity carbon markets. The Coalition to Grow Carbon Markets, for instance, was launched in June 2025 with Singapore, Kenya and the

UK as co-chairs. By November 2025, eleven governments had endorsed the Shared Principles for the voluntary use of high-quality carbon credits.<sup>21</sup> The Coalition's ambition is to grow carbon markets to realise their potential to unlock over \$50 billion of debt-free additional finance annually by 2030.<sup>22</sup>

Singapore has been actively building demand-side infrastructure and supporting the development of integrity frameworks to support carbon market growth. In October 2025, the Singapore Government, through its National Climate Change Secretariat (NCCS), Ministry of Trade & Industry (MTI) and Enterprise Singapore (EnterpriseSG), jointly released the Voluntary Carbon Market Guidance. Developed in consultation with the Singapore Sustainable Finance Association (SSFA) and other partners, the guidance aims to guide companies in using carbon credits as part of a credible decarbonisation plan.<sup>23</sup> EnterpriseSG has also highlighted<sup>24</sup> its ongoing efforts to establish an industry-led buyers' coalition to help drive demand in Asia for high quality carbon credits.

These initiatives are designed to bolster buyer confidence that has weakened growth in carbon markets since 2022, and could lead to a structural increase in the number of buyers for high quality carbon credits, including agri-carbon.

### What makes a high-integrity carbon credit?

A high-integrity carbon credit is one that meets rigorous standards for credibility and climate impact. It is anchored in scientifically sound methodologies that ensure accurate quantification of emission reductions or removals and is supported by transparent and reliable MRV. Such credits comply with the ICVCM's CCPs and are often strengthened by independent validation from Third Party rating agencies which provide granular assessments of credit quality by evaluating factors such as project governance and policy landscapes that extend beyond issuer claims.

<sup>18</sup> Integrity Council for the Voluntary Carbon Market. (16 December 2025). Core Carbon Principles Impact Report 2025. <https://icvcm.org/wp-content/uploads/2025/12/IC-Impact-Report-2025-V71-16Dec25.pdf>

<sup>19</sup> Science Based Targets initiative. (6 November 2025). SBTi releases second draft Corporate Net-Zero Standard V2 for consultation. <https://sciencebasedtargets.org/news/sbti-releases-second-draft-corporate-net-zero-standard-v2-for-consultation>

<sup>20</sup> Voluntary Carbon Markets Integrity Initiative. (2025, April). Claims Code of Practice (Version 3.0). <https://vcmintegrity.org/wp-content/uploads/2025/04/VCMI-Claims-Code-of-Practice-April-2025-Version-3.0.pdf>

<sup>21</sup> Coalition to Grow Carbon Markets. (4 November 2025). Shared Principles for Growing High-Integrity Use of Carbon Credits by Companies and Other Buyers. <https://coalitiontogrowcarbonmarkets.org/shared-principles/>

<sup>22</sup> Coalition to Grow Carbon Markets. (4 November 2025). Plan of Action. [https://coalitiontogrowcarbonmarkets.org/wp-content/uploads/2025/11/The-Coalition-to-Grow-Carbon-Markets\\_Plan-of-Action.pdf](https://coalitiontogrowcarbonmarkets.org/wp-content/uploads/2025/11/The-Coalition-to-Grow-Carbon-Markets_Plan-of-Action.pdf)

<sup>23</sup> Enterprise Singapore. (28 October 2025). Guidance on Role of Carbon Credits in Corporate Decarbonisation. <https://www.enterprisesg.gov.sg/-/media/CC09F5F45AD14D8EBD8AFD12AF3E5E82.ashx>

<sup>24</sup> Ministry of Trade and Industry. (28 October 2025). Launch of government initiatives to support the development of high-integrity carbon markets. <https://www.mti.gov.sg/newsroom/launch-of-government-initiatives-to-support-the-development-of-high-integrity-carbon-markets/>



## 4.2. COMPLIANCE CARBON MARKET

Compliance carbon markets are established through regulatory requirements. Participation in the compliance carbon market is mandatory for the companies and sectors that fall under national or sectoral measures. The demand and prices for carbon credits in compliance markets are largely driven by policy design, and can be established through domestic legislation like emissions trading schemes (e.g. EU ETS) or carbon taxes (e.g. Singapore), or through international policy frameworks for an industry sector, such as CORSIA. For Indian agri-carbon credits, Singapore's carbon tax, which operates within the Article 6 framework, and CORSIA are two of the most relevant compliance demand channels.

## 4.3. ARTICLE 6 OF THE PARIS AGREEMENT

Article 6 of the Paris Agreement enables countries to voluntarily cooperate via market-based mechanisms (covered under Articles 6.2 and 6.4) and non-market approaches (Article 6.8) to achieve their climate targets or Nationally Determined Contributions (NDCs).

### ARTICLE 6.2

Article 6.2 creates a decentralised framework for countries to cooperate bilaterally or multilaterally to achieve their NDCs. In order to tap on this framework, bilateral or multilateral agreements must be in place between countries to govern the cooperation and facilitate the tracking and use of Internationally Transferred Mitigation Outcomes (ITMOs).

ITMOs could come in the form of carbon credits with corresponding adjustments, an accounting mechanism to ensure countries do not double count emissions reductions or removals. Host countries must first authorise the carbon credits for use towards an NDC, for other international mitigation purposes (e.g. CORSIA) and/or other purposes (e.g. voluntary use); information on cooperative approaches, including information on corresponding adjustments, should subsequently be included in host countries' Biennial Transparency Report (BTR) submissions to the UNFCCC.

Under Singapore's carbon tax framework, ITMOs are recognised as Singapore International Carbon Credits (SG ICCs), Singapore's designation for Article 6.2 authorised credits eligible for use by tax liable entities to offset emissions.

### ARTICLE 6.4 / PARIS AGREEMENT CREDITING MECHANISM (PACM)

Article 6.4, or PACM provides for a centralised crediting mechanism under the governance of a Supervisory Body (SBM) established by the UNFCCC. Host countries may authorise Article 6.4 Emission Reductions (A6.4ERs) issued for the activity for use towards achievements of NDCs and/or for other international mitigation purposes (e.g. CORSIA).

While PACM made some operational progress in 2025, currently only one methodology has been approved, with initial A6.4ERs expected to come from legacy CDM projects undergoing transition to PACM.<sup>25</sup> The first A6.4ERs from new

## What is a Letter of Authorisation (LoA)?

A Letter of Authorisation (LoA) is a formal approval issued by a host country under Article 6 of the Paris Agreement. It authorises a carbon project and its resulting credits for international transfer and use. Without an LoA, carbon credits cannot be sold into compliance markets such as Singapore's carbon tax framework or CORSIA. LoAs are not required to access voluntary demand.

<sup>25</sup> The first A6.4ERs to be issued were approved by the Supervisory Body on 26 February 2026, from a clean cookstove project in Myanmar.

projects under PACM are unlikely to materialise until 2027 at the earliest, and supply from agri-carbon projects is unlikely to materialise until much later, given the long development lead time. PACM is therefore not considered a near-term actionable pathway for agri-carbon credits, though it should continue to be monitored for longer term policy and market developments.

#### 4.4. INDIA CARBON MARKET POLICIES

India is currently navigating two policy tracks in tandem – bilateral cooperation under Article 6.2 of the Paris Agreement, and the development of its domestic Carbon Credit Trading Scheme (CCTS).

**Table 3. India's Article 6.2 eligible activities (July 2025)**

<b>GHG Mitigation Activities</b>	Renewable energy with storage (only stored component)
	Solar thermal power plant
	Off-shore wind
	Green Hydrogen
	Compressed bio-gas
	Emerging mobility solutions like fuel cells
	High end technology for energy efficiency
	Sustainable Aviation Fuel
	Best available technologies for process improvement in hard to abate sectors
	Tidal energy, Ocean Thermal Energy, Ocean Salt Gradient Energy, Ocean Wave Energy and Ocean Current Energy
High Voltage Direct Current Transmission in conjunction with the renewable energy projects	
<b>Alternate Materials</b>	Green Ammonia
<b>Removal Activities</b>	Carbon Capture, Utilisation and Storage

### INDIA'S ARTICLE 6.2 POSITION AND AGRI-CARBON

India's Ministry of Environment, Forest and Climate Change (MoEFCC), the National Designated Authority for the Implementation of the Paris Agreement (NADAIPA), revised the list of activities eligible for consideration under Article 6.2 in July 2025. The revised list includes the following:

Agriculture is not currently recognised in India's authorised activities list for Article 6.2. Independent policy commentary further suggests that the exclusion of agriculture by the NADAIPA is due in part to a reluctance to risk compromising the demand for credits from more technology-based, capital-intensive projects in India.<sup>26</sup>

The list of activities authorised by India under Article 6.2 will be valid for three years and while unlikely to change in the near term, NADAIPA has indicated its willingness to revise the list at any time. Without authorisation, agri-carbon credits from India will be unable to find their way into the growing compliance markets like CORSIA and the Singapore carbon tax framework, and this remains one of the key structural obstacles to be addressed.

### INDIA'S DOMESTIC CARBON MARKET

Separate from Article 6.2, India published its domestic carbon market mechanism in early 2025, under the Carbon Credit Trading Scheme (CCTS). The CCTS is expected to be launched in mid-2026 with an initial focus on the industrial sector. The expectation is for domestic credits to be used to achieve emission reduction targets. Although India's CCTS and international compliance markets under Article 6.2 are progressing along distinct paths, the establishment of a well-functioning national carbon market could strengthen domestic market infrastructure and support more active participation by India in international carbon markets in the future, including potentially for agri-carbon credits.

#### 4.5. SINGAPORE CARBON MARKET POLICIES

##### SINGAPORE'S CARBON PRICING FRAMEWORK

Singapore first introduced its carbon tax at S\$5/t on 1 January 2019, applied to all industrial facilities with annual scope 1 emissions > 25,000t. In 2022, the Singapore Government announced that the carbon tax rates would be raised to S\$25/t in 2024 and 2025, S\$45/t in 2026 and

<sup>26</sup> Masabathula, S. (31 October 2025). India's climate policy must not leave farmers behind. *The Indian Express*. <https://indianexpress.com/article/opinion/columns/indias-climate-policy-must-not-leave-farmers-behind-10338538/>



## How Singapore's carbon tax creates demand for international carbon credits

Singapore's carbon tax covers all major industrial emitters in Singapore and is set to rise progressively through 2030. To reduce their tax liability, tax-liable facilities may use international carbon credits sourced from countries with which Singapore has signed an Implementation Agreement (IA) under Article 6.2. Such credits must be supported by an LoA, authorising them for international transfer and use towards NDC compliance.

2027, with a view of reaching S\$50/t to S\$80/t by 2030. The intention is for carbon tax revenues collected to be used to support decarbonisation efforts and the green transition of Singapore's economy.

Given the country's space constraints and limited ability to tap on renewable energy, Singapore also made clear its intention to explore international cooperation through carbon markets aligned with Article 6, to help achieve their climate targets.

The Carbon Pricing (Amendment) Act, introduced in 2022, enables taxable facilities to use eligible international carbon credits (SG ICCs) to offset up to 5% of their taxable emissions from 1 January 2024. This framework, through which Singapore's carbon tax creates demand for international carbon credits, is referred to in this report as the Singapore compliance market.

## ARTICLE 6.2 AND THE SINGAPORE COMPLIANCE MARKET

Singapore's carbon tax does not use domestic credits and tax-liable entities must use SG ICCs, sourced under an Article 6.2 IA signed by Singapore with a host country. The carbon tax thus effectively serves as a compliance demand mechanism that relies solely on supply generated under the Article 6.2 framework of the Paris Agreement.

To accelerate implementation of its carbon policy, Singapore has chosen to leverage existing voluntary carbon market infrastructure and currently allows for carbon credits generated from international carbon crediting programmes, including Verra, Gold Standard, ACR, ART TREES and GCC, that have been authorised under Article 6 for use by the respective host country. This approach lowers barriers to entry for project developers who are already engaged in VCM activities to potentially develop projects for Singapore's compliance market, and exemplifies the convergence of voluntary and compliance carbon markets.

## SINGAPORE'S IMPLEMENTATION AGREEMENT (IA) NETWORK

Singapore's bilateral engagement with host countries on Article 6 follows a two-stage process. It starts with a Memorandum of Understanding (MOU) between Singapore and a host country, which typically outlines their intention to cooperate on carbon markets under Article 6.

Following the signing of an MOU, Singapore looks to enshrine the framework of cooperation through a legally binding IA to provide the legal basis for the proposed activities. The IAs aim to cover processes such as project authorisation from mutually acceptable international carbon crediting programmes, eligible methodologies, reporting requirements and the tracking and application of corresponding adjustments.

**Table 4. Singapore's Article 6 IAs and MOUs**

Region	Country	Status
Asia	Bhutan	IA
	Cambodia	MOU
	Laos	MOU
	Malaysia	MOU
	Mongolia	IA
	Philippines	IA
	Thailand	IA
	Vietnam	IA
Africa	Ghana	IA
	Kenya	MOU
	Morocco	MOU
	Rwanda	IA
	Senegal	MOU
	Zambia	MOU
Latin America	Chile	IA
	Colombia	MOU
	Costa Rica	MOU
	Dominican Republic	MOU
	Paraguay	IA
	Peru	IA
Oceania	Fiji	MOU
	Papua New Guinea	IA

Note: Shaded rows indicate a signed Implementation Agreement with Singapore

As of April 2026, Singapore has concluded 11 IAs (highlighted below) and signed MOUs with a further 12 host countries globally (Table 4). The list of eligible methodologies under the IAs will be updated annually<sup>27</sup> and is subject to change to allow for the addition or removal of carbon crediting methodologies and/or programmes.

India has not yet signed an MOU or an IA with Singapore for cooperation under Article 6 of the Paris Agreement, although discussions between the two countries continue.<sup>28</sup>

### AGRI-CARBON METHODOLOGY APPROVALS ACROSS SINGAPORE'S IAS

All IAs signed by Singapore and their partner host countries include a bilaterally-agreed, country-specific eligibility list, that contains a list of carbon crediting programmes and methodologies that are recognised by both countries. Of the 11 IAs signed so far, the list of eligible methodologies has been made publicly available for 8 of them, and many allow

for agri-carbon credits, as outlined in Table 5 below. Access to the Singapore carbon tax market is therefore determined not only by methodology eligibility at the registry level, but also by whether specific methodologies are recognised within the IAs signed between Singapore and individual host countries.

### SINGAPORE'S ELIGIBILITY CRITERIA FOR ICCS

In addition to the country-specific eligibility lists, all carbon credits under Singapore's ICC framework must meet a set of general environmental integrity criteria. These require that credits are real and conservatively quantified, additional relative to a business-as-usual scenario, verified by an independent third party and not double counted in contravention of the Paris Agreement. Credits must also be generated from emissions reductions or removals occurring between 1 January 2021 and 31 December 2030, in line with Article 6 of the Paris Agreement. The full criteria are set out in Appendix C.

<sup>27</sup> International Carbon Credits Guidance Document, v1.1 (Feb 2024). Ministry of Sustainability and the Environment & National Environment Agency of Singapore.

<sup>28</sup> Ganapathy, N. (2025, August 14). Strong India-Singapore ties key to economic growth amid "volatile landscape": DPM Gan. *The Straits Times*. <https://www.straitstimes.com/asia/south-asia/strong-india-singapore-ties-key-to-economic-growth-amid-volatile-landscape-dpm-gan>

**Table 5. Agri-carbon methodologies approved under existing IAs**

Registry	Methodology	Host Country IA Approved
Verra	VM0042 - Improved Agricultural Land Management	Bhutan, PNG, Ghana, Rwanda, Thailand, Mongolia, Vietnam
Gold Standard	Methane Emission Reduction by Adjusted Water Management Practice in Rice Cultivation	Peru, Rwanda, Thailand, Vietnam
Gold Standard	GS Soil Organic Carbon Framework Methodology	Rwanda, Thailand, Vietnam
Verra	VM0041 - Methodology for the reduction of enteric methane emissions from ruminants through the use of feed ingredients V2.0  <i>Note: Considered out of scope for this study given methodology's focus on industrial feed additives and limited adoption potential in India</i>	PNG, Bhutan, Thailand, Mongolia, Vietnam
Gold Standard	Methane emissions reduction from enteric fermentation in beef cattle through application of feed supplements V1.0  <i>Note: Considered out of scope for this study given methodology's focus on industrial feed additives and limited adoption potential in India</i>	Thailand, Vietnam

## 4.6. CORSIA

### CORSIA OVERVIEW

The Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA), launched by the International Civil Aviation Organisation (ICAO)<sup>29</sup> in 2016, is the first global market-based measure adopted by an industry to combat

climate change. In order to maintain their license to operate while meeting international climate goals, participating airlines must offset emissions growth beyond 2019 levels by purchasing and surrendering CORSIA Eligible Emissions Units (EEUs). While airlines are required to report emissions annually, CORSIA offsetting requirements are aggregated into three-year compliance cycles.

**Table 6. CORSIA compliance cycles**

CORSIA Phase	Compliance Period	Baseline	Retirement deadline <sup>30</sup>
Pilot Phase	2021-2023	2019 emissions	31 January 2025
First Phase	2024-2026	85% of 2019 emissions	31 January 2028
Second Phase	2027-2035 <sup>31</sup>	85% of 2019 emissions <i>(subject to periodic ICAO reviews)</i>	31 January 2031 (for 2027-2029)
			31 January 2034 (for 2030-2032)
			31 January 2037 (for 2032-2035)

As of 1 January 2026, 130 countries have signed up for the first compliance phase. While participation in the pilot and first phases is voluntary, once a country opts in, all its attributed airlines must comply. For the second phase, participation becomes mandatory for countries with an individual annual share of international aviation activity in 2018 exceeding 0.5% of total Revenue Tonne Kilometers (RTKs)<sup>32</sup> or whose cumulative share reaches 90% of total activity. While India and China are not participating in CORSIA's First Phase, both are expected to join the mandatory Second Phase.

### CORSIA AS A COMPLIANCE DEMAND CHANNEL

CORSIA is emerging as a key demand channel for carbon credits. While operating outside the Article 6 framework, CORSIA has adopted Article 6 accounting practices, importantly requiring CORSIA Eligible Emissions Units (EEUs) to be accompanied by host country authorisation and corresponding adjustments to prevent double counting.

<sup>29</sup> Established in 1944, ICAO is a United Nations agency tasked with supporting coordination and promoting the use of standard and recommended practices for international civil aviation between 193 States.

<sup>30</sup> The deadline for cancellation of EEUs for CORSIA compliance is the date listed, or 60 days after the State informs aeroplane operators of their total final offsetting requirements for the relevant compliance period, whichever date comes later.

<sup>31</sup> CORSIA's Second Phase is split into three compliance periods: 2027-2029, 2030-2032 and 2033-2035.

<sup>32</sup> RTKs is the utilised/sold capacity for passengers and cargo expressed in metric tonnes, multiplied by distance flown.

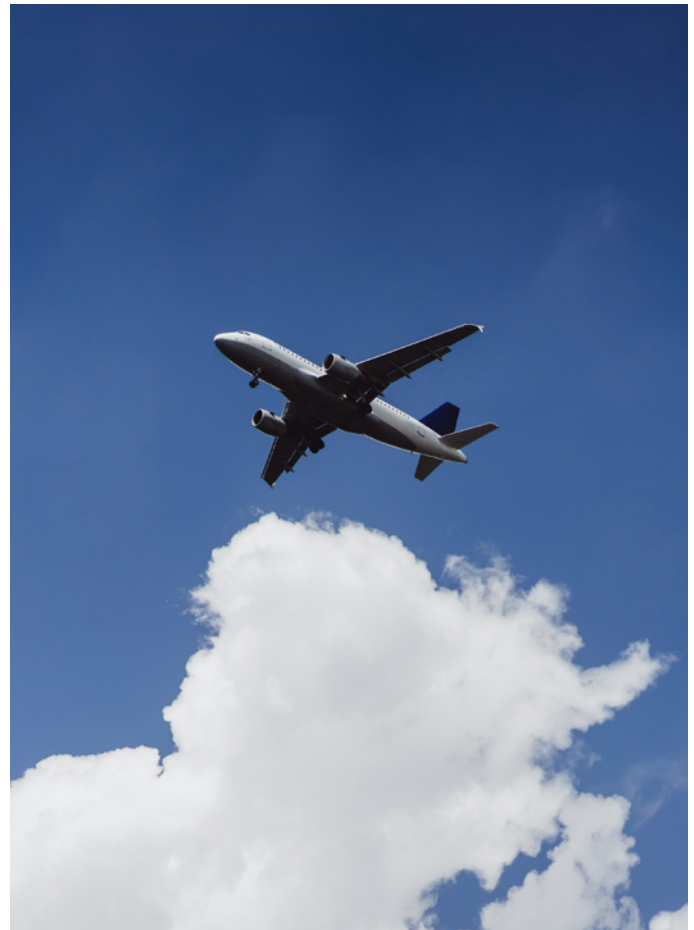
In October 2025, ICAO published its 2024 Sectoral Growth Factor (SGF) for the purpose of calculating the 2024 emissions offsetting requirements for each participating aeroplane operator.<sup>33</sup> The SGF has been translated to represent demand of roughly 58 million EEU's for 2024; coupled with estimates for 2025 and 2026, it is expected that CORSIA First Phase demand could be upwards of 200 million tonnes for the period 2024-2026.

When Indian airlines are brought under CORSIA from 2027, there could be an inherent commercial and political advantage to meet the need for required offsets domestically. Utilising Indian agri-carbon credits would allow Indian carriers to direct their compliance monies to support rural development and benefit smallholder farmers in India, supporting India's wider policy objectives. Crucially, this would still require India to issue the necessary Letters of Authorisation (LoAs) and carry out the associated corresponding adjustment.

### Indian airlines' use of domestic agri-carbon under CORSIA depends on LoAs

As India enters CORSIA Phase 2 from 2027, its airlines will be required to procure and surrender CORSIA Eligible Emissions Units (EEUs) to offset their growth in emissions. There is clear rationale for sourcing these credits from domestic agri-carbon projects in India, allowing compliance expenditure to remain within the country while supporting smallholder farmers.

However, even domestically sourced credits must meet all CORSIA eligibility requirements, including a host country LoA and a corresponding adjustment to prevent double counting against India's own NDC. Thus, India's decision on whether to include or exclude agriculture from its list of Article 6.2 eligible activities will determine whether Indian airlines can use domestic agri-carbon credits for compliance.



### CORSIA SUPPLY CONSTRAINTS AND AGRI-CARBON RELEVANCE

While growing, CORSIA eligible supply has been restricted by the requirement for LoAs. As of 1 March 2026, confirmed EEU supply stood at ~34 million tonnes across 7 projects, with a majority of supply attributed to nature-based credits and none currently from the agri-carbon sector. Given supply constraints, a cumulative supply deficit of 202 million tonnes is expected to persist up to 2035 as CORSIA participation turns mandatory in the Second Phase. Persistent supply constraints could create opportunities for new project types, including agri-carbon projects, to enter the market provided they obtain host-country authorisation and meet CORSIA eligibility requirements. However, pricing and eligibility constraints mean not all emerging project types are well-placed to fill this gap—for example, Enhanced Rock Weathering (ERW), despite its high durability, faces both eligibility and cost barriers under current CORSIA requirements.

<sup>33</sup> International Civil Aviation Organisation. (2025). CORSIA Annual Sector Growth Factor (4th ed.). <https://www.icao.int/sites/default/files/environmental-protection/CORSIA/Documents/CORSIA%20Central%20Registry/CORSIA-Annual-SGF-4ed-2025-web.pdf>

## ERW and CORSIA: opportunity and pricing reality

Enhanced Rock Weathering (ERW) is a carbon removal process that accelerates the natural weathering of silicate rocks by spreading crushed rocks on land, enabling CO<sub>2</sub> to react with minerals and be converted into stable forms that are stored in oceans for thousands of years.<sup>34</sup>



Despite its growing relevance, ERW is not currently eligible for compliance use under CORSIA. While Isometric is approved under the CORSIA First Phase, enhanced weathering credits are excluded; Puro.earth remains under assessment. Beyond eligibility, pricing is a fundamental constraint. As durable carbon removals, ERW credits typically command a premium, with recent indicative pricing estimated at \$360/t.<sup>35</sup> In contrast, CORSIA-eligible credits are currently traded at significantly lower levels, with the 2026 year-to-date average spot price of \$16.05/t.<sup>36</sup> In a cost-driven compliance market, buyers are expected to prioritise lower-cost eligible supply over durability or co-benefits. As a result, even if ERW becomes eligible in future phases, uptake is likely to remain limited unless carbon removals are explicitly prioritised (e.g. through quotas post-2035). ERW may therefore be better positioned as a premium VCM product, where buyers are willing to pay for high-durability removals, than a near-term CORSIA supply source.

## PROGRAMMES APPROVED TO SUPPLY CORSIA EEUS FOR THE FIRST PHASE

As of January 2026, eight programmes are fully approved to supply CORSIA Eligible Emissions Units for the First Phase.

**Table 7. Emissions unit programmes approved to supply CORSIA eligible emissions units for CORSIA First Phase**

Emissions Unit Programme	Programme-designated Registry
American Carbon Registry (ACR)	ACR Registry
Architecture for REDD+ Transactions (ART)	ART Registry
Climate Action Reserve (CAR)	Climate Action Reserve Voluntary Offset Project Registry
Global Carbon Council (GCC)	Global Carbon Council Registry
Gold Standard (GS)	GSF Impact Registry
Isometric	Isometric Registry
Premium Thailand Voluntary Emission Reduction Program (Premium T-VER)	Premium T-VER Registry
Verified Carbon Standard (VCS)	Verra Registry

Note: the list of eligible programmes continues to evolve. The most current list of ICAO CORSIA approved programmes is available at <https://www.icao.int/CORSIA/corsia-eligible-emissions-units>

<sup>34</sup> Isometric. (2026). Enhanced weathering in agriculture protocol. <https://registry.isometric.com/protocol/enhanced-weathering-agriculture>; Puro.earth. (2025). Enhanced rock weathering: Methodology for CO<sub>2</sub> removal. <https://7518557.fs1.hubspotusercontent-na1.net/hubfs/7518557/ERW%20Standards/ERW%202025/ERW%20Edition%202025%20v1.pdf>

<sup>35</sup> CDR.fyi. Enhanced Weathering Price Index. <https://www.cdr.fyi/>

<sup>36</sup> Climate Impact X. (2026). CORSIA Phase 1 X – Global Markets (CP1X-GM) Benchmark Price [YTD average 2026 to 9 April 2026, US\$/t].



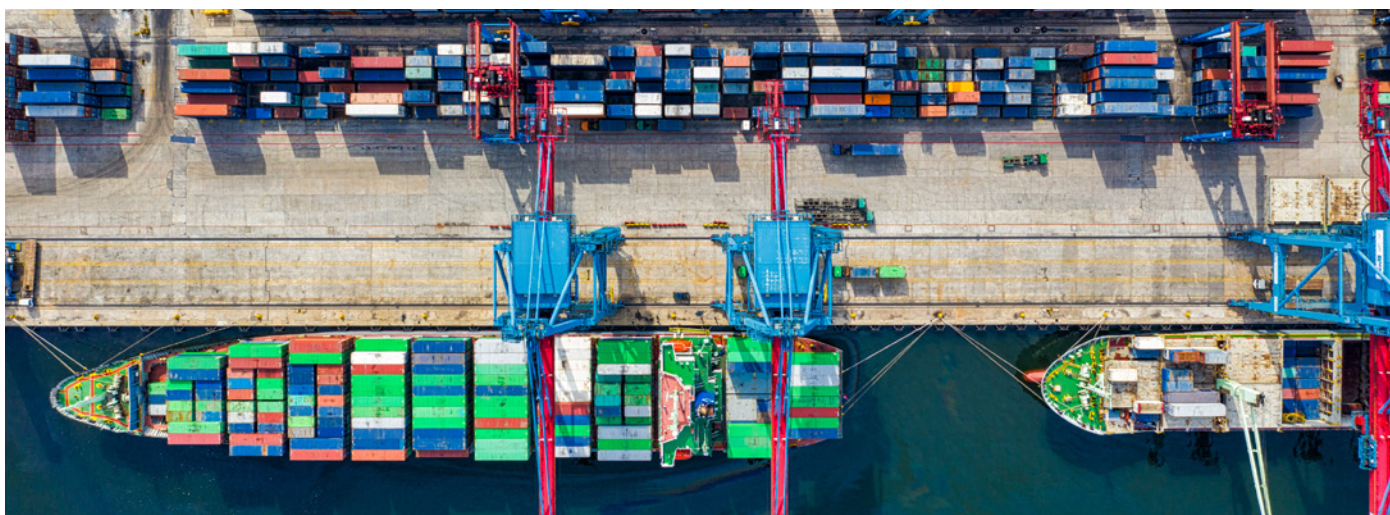
## AGRI-CARBON METHODOLOGIES AND CORSIA ELIGIBILITY

ICAO adopts rigorous eligibility standards for CORSIA EEU's. EEU's must not only be from an eligible programme, but must also comply with applicable vintage requirements, have measures in place to prevent double counting, and meet methodology-level parameters. Of significance to agri-carbon projects in India, ICAO applies restrictions on the eligibility of credits from projects developed in REDD+ countries utilising AFOLU methodologies and estimated to generate more than 7,000 tonnes of carbon credits per year, with allowable exceptions.

**Table 8. Agri-carbon methodologies and CORSIA eligibility**

Registry	Methodology	CORSIA eligibility	Notes
Verra	VM0042 - Improved Agricultural Land Management	Eligible	Explicitly allowed per ICAO's "CORSIA Eligible Emissions Units" document, Oct 2025
	VM0041 - Methodology for the reduction of enteric methane emissions from ruminants through the use of feed ingredients V2.0*	Eligible	Explicitly allowed per ICAO's "CORSIA Eligible Emissions Units" document, Oct 2025
	VM0051 – Improved Management in Rice Production, v 1.0	Eligible	While not yet explicitly allowed in ICAO's "CORSIA Eligible Emissions Units" document, Verra is engaging ICAO to address the uncertainty
Gold Standard	Methane Emission Reduction by Adjusted Water Management Practice in Rice Cultivation	Eligible	Explicitly allowed per ICAO's "CORSIA Eligible Emissions Units" document, Oct 2025
	GS Soil Organic Carbon Framework Methodology	Eligible	Explicitly allowed per ICAO's "CORSIA Eligible Emissions Units" document, Oct 2025
	Methane emissions reduction from enteric fermentation in beef cattle through application of feed supplements V1.0*	Eligible	Explicitly allowed per ICAO's "CORSIA Eligible Emissions Units" document, Oct 2025
Climate Action Reserve (CAR)	CAR U.S. Soil Enrichment Protocol (SEP), v1.1	<i>Conditionally eligible</i>	Credits issued to activities in REDD+ countries and estimated to generate over 7,000 tonnes annually are excluded, with the exception of activities developed in Mexico under CAR's Mexico Forest Protocol.
	U.S. Nitrogen Management Protocol	Eligible	
	U.S. Rice Cultivation Protocol	Eligible	

\*Considered out of scope for this study given methodology's focus on industrial feed additives and limited adoption potential in India



#### 4.7. SUPPLY CHAIN INSETTING

Supply chain insetting represents another emerging source of demand for Indian agri-carbon, separate from the voluntary and compliance channels modelled in this report. Insetting involves funding emission reductions or removals within a buyer's own supply chain, leading to a direct impact on its Scope 3 emissions. Unlike carbon credits, insetting does not currently operate as a standardised, independently-issued credit; it typically takes the form of non-tradable value chain interventions.

However, standardisation is starting to emerge. For instance, Verra is advancing its Scope 3 Standard (S3S) Programme, with "Intervention Units" targeted for 2026. Notably, the

VM0042 methodology is one of the first methodologies being adapted for the S3S Programme, creating a potential alternate pathway for Indian agri-carbon projects.

Scope 3 commitments require companies to account for emissions across their value chains, including from upstream agricultural suppliers. Agri-carbon projects implemented within these supply chains can contribute directly to Scope 3 abatement, making insetting a commercially distinct pathway from voluntary offsetting. CBAM reinforces this dynamic; although it does not directly recognise carbon credits, the pressure it places on exporters to reduce embedded emissions strengthens broader incentives for value chain decarbonisation, positioning insetting as a potentially important demand channel.

### CBAM and the emerging role of supply chain decarbonisation

The EU Carbon Border Adjustment Mechanism (CBAM) entered into force on 1 January 2026, requiring EU importers of covered goods to purchase CBAM certificates to account for embedded emissions in imported products. CBAM certificates reflect the average price of EU Emissions Trading Scheme (EU ETS) allowances; in 2026, 4 quarterly CBAM certificate prices will be published, before shifting to weekly prices 2027 onwards. CBAM certificates have been priced at €75.36 per tonne in Q1 2026.<sup>37</sup> In practice, CBAM requires EU importers to calculate the embedded GHG emissions in imported goods and surrender CBAM certificates at the prevailing EU ETS price to account for those emissions. Where a carbon price has already been paid in the country of origin, this can be deducted, reducing the importer's certificate obligation. This creates indirect pressure on exporters to measure, disclose and reduce the emissions intensity of their products to remain competitive in EU markets, increasing the importance of value chain decarbonisation.

Imports of cement, iron & steel, aluminium, fertilisers and electricity & hydrogen are currently covered; agricultural products are not currently in scope. CBAM currently operates through a certificate system and does not recognise carbon credits as a compliance mechanism. However, the EU is exploring the possibility of recognising Article 6-authorized credits as eligible deductions against CBAM obligations.<sup>38</sup> If introduced, this could strengthen the use case for Article 6-authorized Indian agri-carbon credits within European supply chains.

<sup>37</sup> European Commission. Price of CBAM certificates. Taxation and Customs Union. [https://taxation-customs.ec.europa.eu/carbon-border-adjustment-mechanism/price-cbam-certificates\\_en](https://taxation-customs.ec.europa.eu/carbon-border-adjustment-mechanism/price-cbam-certificates_en)

<sup>38</sup> Gualandi, R. (27 March 2026). EU states back counting Article 6 credits towards CBAM payments. *Carbon Pulse*. <https://carbon-pulse.com/497512/>

5

**PRICING  
BENCHMARK  
ANALYSIS**



## 5.1. OBJECTIVES AND ANALYTICAL SCOPE

The following analysis aims to evaluate the pricing dynamics of agri-carbon credits within the voluntary carbon market and to identify the key drivers of observed price differentials.

The primary objective is to determine where Indian agri-carbon projects may credibly position themselves within prevailing market pricing bands, and to assess whether pricing differentials are attributable to variables, such as geography, project subtype, methodology, among structural project characteristics.

The analysis adopts a comparative, distribution-based approach to evaluate both cross-market positioning and intra-segment differentiation, with the aim of identifying defensible pricing corridors and the conditions under which price premiums may be achieved.

## 5.2. METHODOLOGICAL APPROACH

The analysis draws primarily on CIX proprietary market pricing data, supplemented by publicly available sources, covering observed bids, offers and transactions between 2022 and 2026. The total dataset comprises 339 price observations for agri-carbon projects and 20,415 for nature-based solutions (NbS) projects more broadly. Given the relatively limited liquidity in the agri-carbon segment, both confirmed transactions and indicative market quotes are included to reflect prevailing market colour.

The analysis is structured in two stages. First, positioning agri-carbon pricing relative to other NbS categories. Second, isolating drivers of price differentiation within the agri-carbon segment, including geography, project subtype, and

methodology. Box-and-whisker distributions and median pricing are emphasised throughout to mitigate distortion from outliers. The analysis is descriptive rather than causal, where the observed pricing differentials represent indicative market patterns, not definitive evidence of isolated causal effects. A detailed note on data composition and limitations is provided in the Appendix D.

## 5.3. AGRI-CARBON POSITIONING WITHIN THE BROADER NBS LANDSCAPE

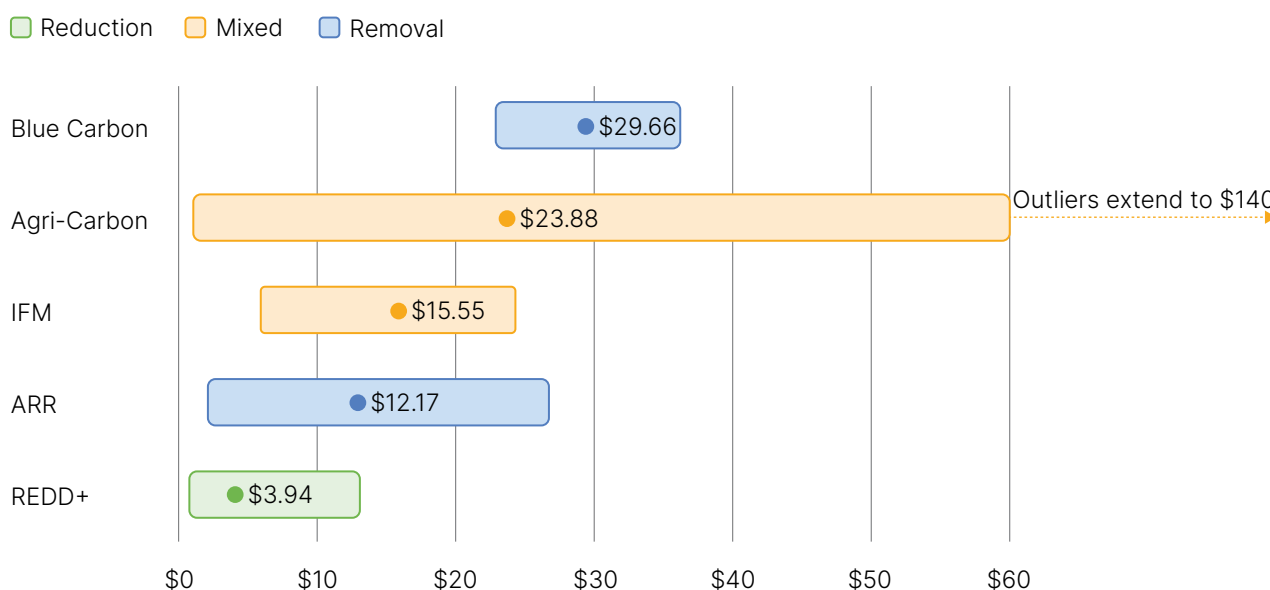
When examining agri-carbon pricing, it is useful to first situate agri-carbon within the broader umbrella of NbS carbon project types. Major NbS carbon project types include Improved Forest Management (IFM); Reducing Emissions from Deforestation and Forest Degradation (REDD+); Afforestation, Reforestation, and Revegetation (ARR); and Blue Carbon, consisting of wetland and mangrove restoration.

Against this backdrop, the chart below compares observed price distributions across agri-carbon and other NbS project types, highlighting relative positioning in terms of central tendency and dispersion. Project types are colour-coded to indicate whether they represent a reduction, removal, or mixed mitigation activity.

Agri-carbon credits on average are positioned in the upper pricing tier of NbS projects. Ranking second only to Blue Carbon on average price, agri-carbon has an average price of \$23.88/t while Blue Carbon commands an average price of \$29.66/t. Both agri-carbon's average price and median price of \$20.20/t lie above the average and median prices for IFM, ARR, and REDD+, indicating a structural price premium over these project types.

**Chart 4. Price comparison across NbS credit types**

Average price (●) across total reported range, \$/tCO<sub>2</sub>e



The categorisation of project types by reduction, removal, and mixed mitigation activities also influences the perceived market value of the associated credits, with carbon removal credits generally commanding premiums over mixed and reduction credits. Like IFM, agri-carbon projects are typically classified as mixed mitigation. However, observed market pricing suggests that the market currently values agri-carbon credits as more closely in line with premium removal-oriented categories than with avoidance-driven, commoditised segments such as REDD+.

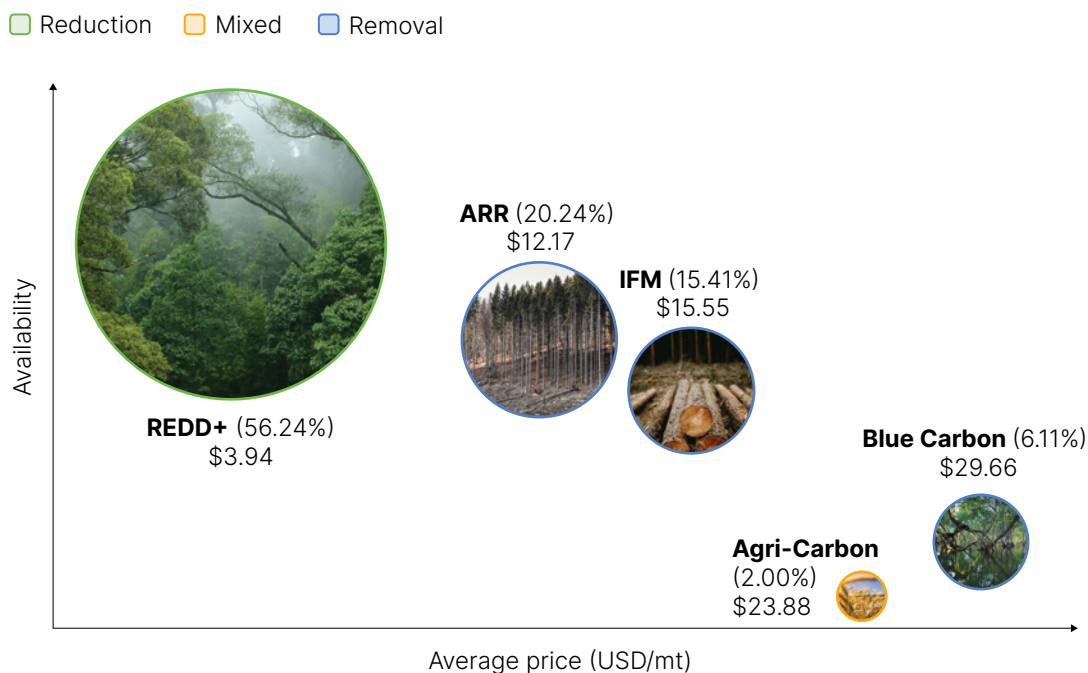
This premium is largely driven by regenerative agriculture<sup>39</sup> – the highest-priced agri-carbon subtype, as will be discussed in detail in the Section 5.5 – and reflects a combination of factors that distinguish it from IFM despite both being mixed-credit types. First, supply scarcity: agri-carbon accounts for a materially smaller share of total NbS market activity than IFM, a dynamic examined in further detail later in this section, consistent with a scarcity premium over a more liquid and established category. Second, differentiated co-benefits including soil health, water efficiency, and farmer livelihood outcomes attract a distinct and targeted buyer segment, particularly corporates with agricultural supply chain commitments. Third, quality-conscious buyers could perceive well-measured soil carbon sequestration as carrying lower reversal and leakage risk than forest-based removals, subtly positioning regenerative agriculture removal credits above IFM in integrity-driven procurement. Taken together, these factors explain why the agri-carbon premium

is concentrated in regenerative agriculture specifically rather than distributed evenly across the category, a distinction that is material to interpreting the wide price dispersion observed at the segment level.

Agri-carbon has the widest price dispersion of any NbS project type examined, with an interquartile range of \$7.58/t to \$30/t, excluding outliers that reach up to \$140/t. By contrast, REDD+ shows the tightest price dispersion, reflecting the more standardised nature of the REDD+ segment. Agri-carbon's wide price dispersion may be a result of several factors, including the varied nature of agri-carbon project subtypes, as well as pricing uncertainty because of the relatively immature market for agri-carbon. Such a wide dispersion demonstrates that pricing is not yet anchored to a standardised commodity benchmark but remains highly sensitive to qualitative differentiation and buyer perception.

While averages and dispersion provide insight into inter-category heterogeneity and pricing maturity, they do not in themselves explain how capital is allocated across the NbS landscape. To contextualise agri-carbon's pricing dynamics, it is therefore necessary to examine relative market participation alongside price levels. The accompanying bubble chart plots each NbS credit type by its share of total recorded market activity (based on count of prices observed between 2022-2026), with bubble size representing relative participation.

**Chart 5. Price and market size comparison across NbS credit types**



\*Bubble size denotes market activity (count of listings).

<sup>39</sup> Regenerative agriculture, as used in this report, refers to farming practices that improve soil health and organic carbon content, including reduced or no-till cultivation, cover cropping, or crop rotation. Practices in this category typically generate soil organic carbon credits under methodologies such as VM0042 and CAR SEP. Note that VM0042 also covers sustainable grassland management, which is treated as a distinct subtype in the pricing analysis.

Agri-carbon's share of market activity within the NbS category stands at 2.00%. As illustrated further by Blue Carbon's similarly minimal share of activity at 6.11% versus REDD+'s dominance of the market at 56.24%, there is typically an inverse relationship between price level and market activity. Higher-priced segments tend to exhibit lower market depth, suggesting scarcity premiums and differentiated buyer segments.

Agri-carbon's materially lower market depth and markedly wider price dispersion indicate that although premium positioning is achievable, pricing remains highly project-specific and narrative-led, rather than anchored to a mature and liquid market equilibrium. In this context, a median corridor of approximately \$20-\$24/t provides a more defensible reference point for global agri-carbon pricing, while outlying high-end prints should not be treated as base-case outcomes.

The pronounced dispersion observed in agri-carbon pricing reinforces the conclusion that the segment is not yet perceived or traded as a standardised commodity in the way more established NbS categories, such as REDD+, increasingly do. Instead, pricing appears highly sensitive to

qualitative project attributes and buyer sentiment, resulting in differentiated outcomes.

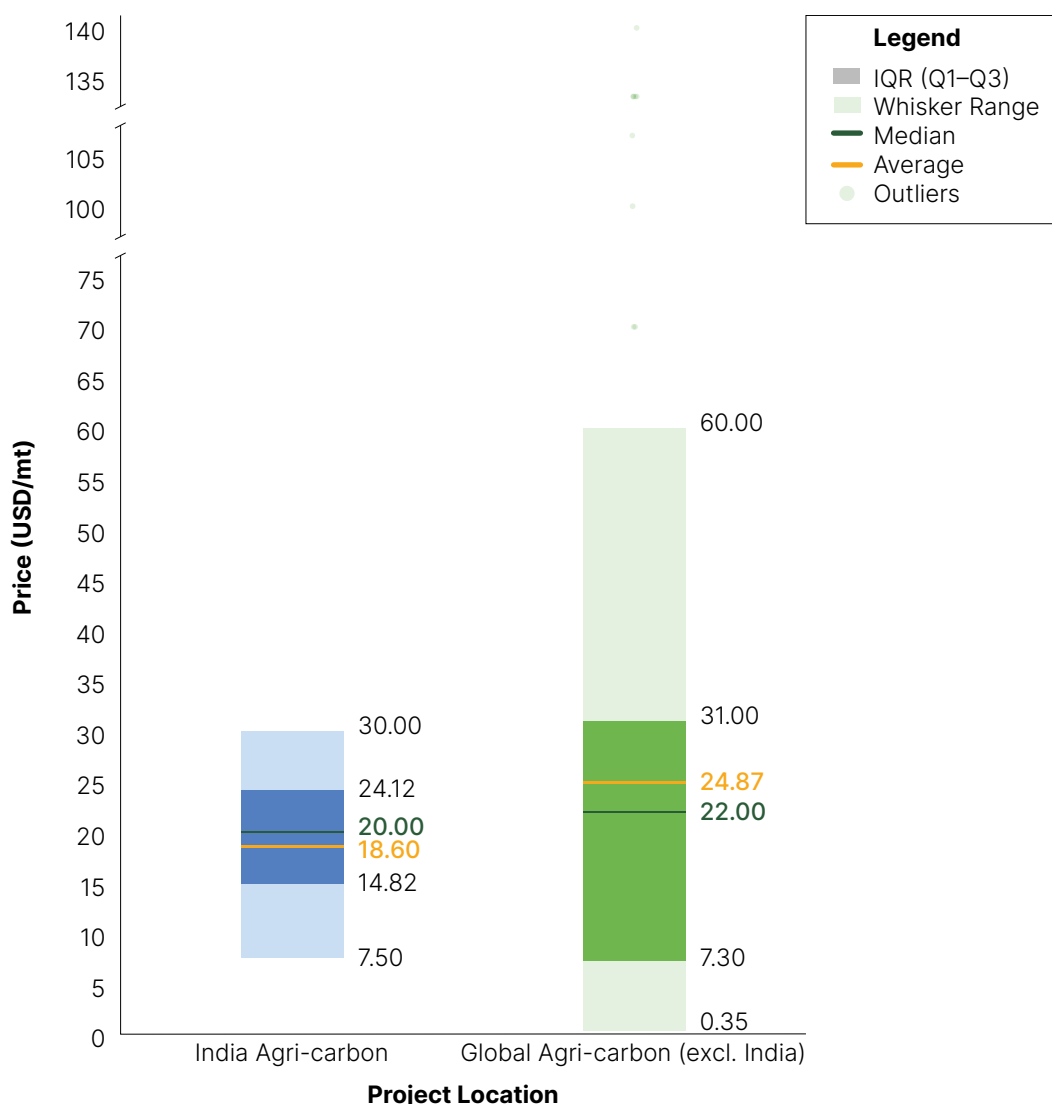
From a commercial perspective, this means that agri-carbon's premium positioning should be interpreted as conditional rather than automatic. The segment can support higher pricing than most other NbS categories, but observed premiums are not broadly repeatable across all projects and cannot be inferred from category averages alone.

#### 5.4. POSITIONING INDIAN AGRI-CARBON WITHIN THE GLOBAL MARKET

To move beyond high-level market positioning and toward a more explanatory pricing framework, it is therefore necessary to isolate and test the underlying variables that shape price formation, namely geography, project subtype, and applied methodology. The following analysis begins with a geography-based assessment, comparing Indian agri-carbon to global agri-carbon pricing (exclusive of India prices).

Geography-based distributions indicate a consistent pricing discount for Indian agri-carbon. While India's median price level at \$20/t sits only modestly below the global median

**Chart 6. Price comparison between India and global agri-carbon**



## Why Indian agri-carbon projects trade at a discount

Indian agri-carbon credits have historically traded at a discount of approximately \$6/t below the global average and \$8/t below comparable projects in other Low- and Middle-Income (LMI) countries. Part of this aggregate discount reflects project mix – India's pipeline is weighted towards rice cultivation where global median pricing sits at \$20/t, rather than the higher-priced regenerative agriculture segment (\$31.50/t). The residual discount observed after controlling for project type is largely due to two factors:

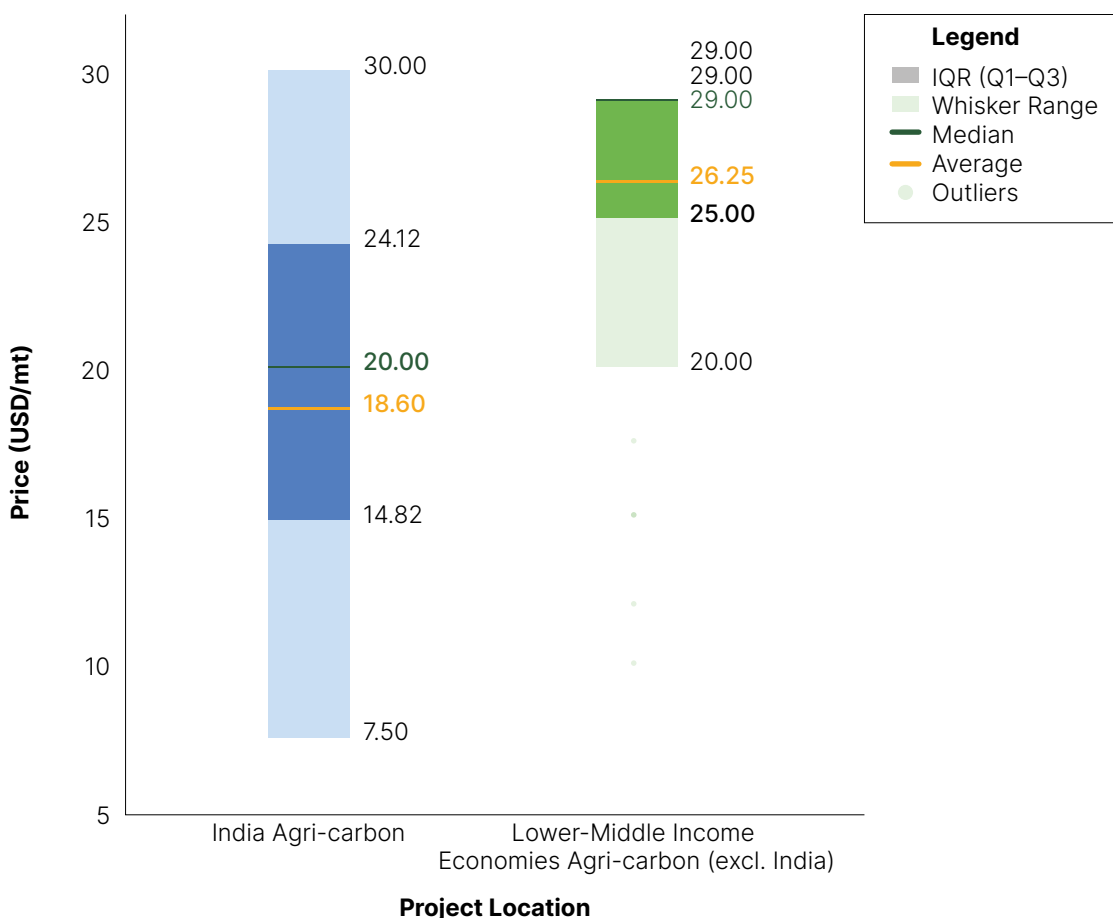
- Methodology coverage: Indian projects widely use methodologies that are not yet CCP-approved (e.g. VM0051, GS AWD) or that have been inactivated by the registries (e.g. VM0017, AMS-III.AU), limiting access to buyers willing to pay a premium for high-integrity projects.
- Market perception: a residual India-specific discount is observed even after controlling for project type, particularly for regenerative agriculture practices. This may reflect buyer concerns around credit integrity and limited track record, though these drivers cannot be directly observed in transaction data.

The India discount is expected to narrow as projects build track records, third-party ratings coverage improves and CCP-approved methodologies gain traction among Indian project developers.

of \$22/t, the average gap is more significant, with India's average at \$18.60/t and the global average at \$24.87/t.<sup>40</sup> This indicates that India does not appear to access the premium tail observed in the global dataset.

To explore Indian pricing within a more relevant geographical context, the next analysis compares Indian pricing to that of low- and middle-income (LMI) countries, as classified by the World Bank.

**Chart 7. Price comparison between India and LMI countries**



<sup>40</sup> The agri-carbon dataset comprises 339 price observations, including 44 observations from India-based projects.

Based on historical transaction data, Indian projects have also priced at a pronounced discount to projects in other LMI countries. Indian pricing's upper quartile at \$24.12/t sits below LMI pricing's first quartile at \$25/t, showing limited overlap across interquartile ranges. This suggests the existence of India-specific risk perceptions and/or compositional effects, such as agri-carbon subtype<sup>41</sup>, methodology, cost of production, rating, among other variables.

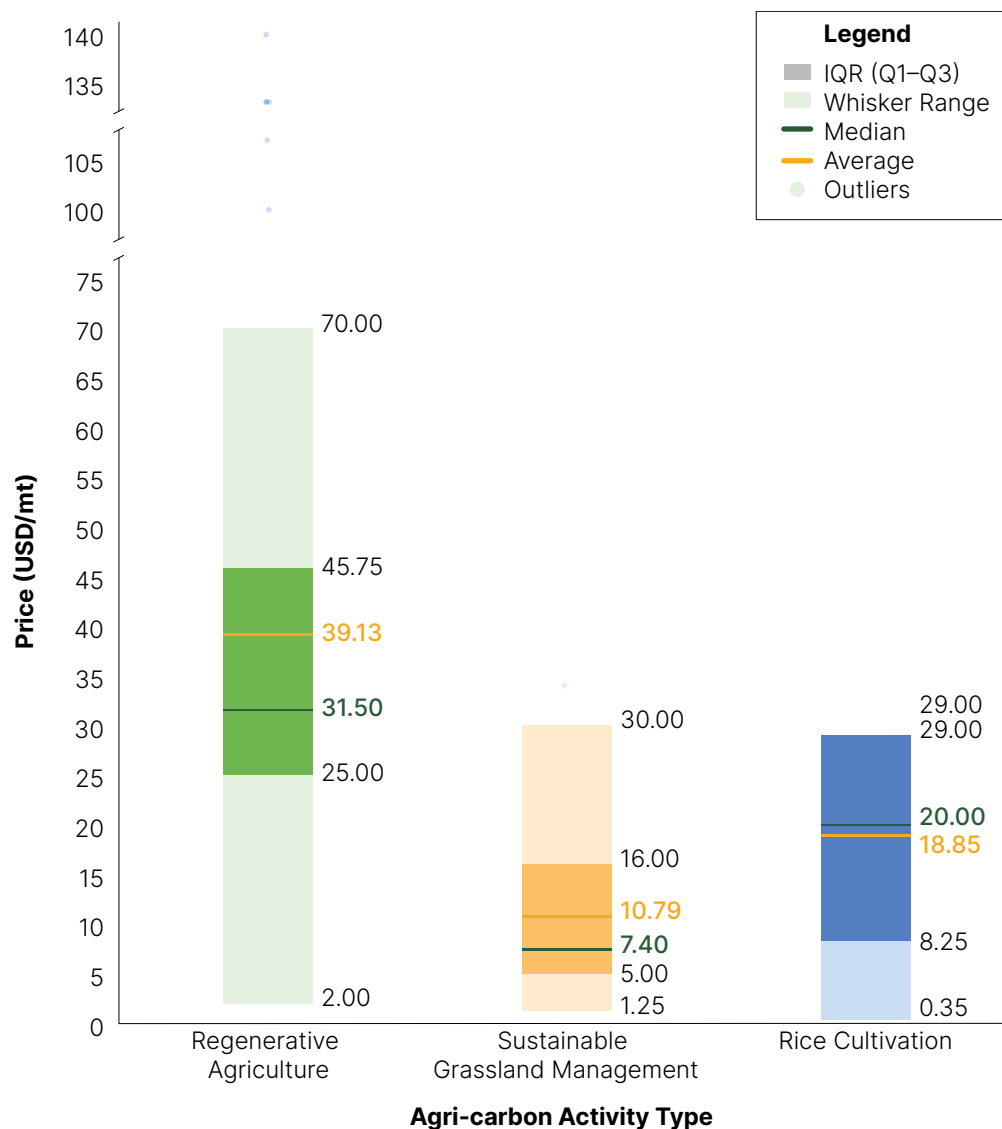
This result also indicates that the India discount is not simply an emerging-market effect. If India were pricing in line with comparable lower-income peers, the gap to the global sample could be explained largely by development status. Instead, the persistent gap to the LMI sample suggests that either India-specific project composition or India-specific market perception has exerted a distinct downward influence on price realisation.

## 5.5. COMPOSITIONAL DRIVERS OF AGRI-CARBON PRICING

The below chart shows different pricing for project subtypes within the agri-carbon segment. Statistics indicate that regenerative agriculture commands a clear structural pricing premium over other subtypes. Median pricing for regenerative agriculture at \$31.50/t materially exceeds that of rice cultivation at \$20/t and sustainable grassland management at \$7.40/t. The premium tail observed in global agri-carbon pricing is thus largely comprised of regenerative agriculture transactions.

Rice cultivation occupies a mid-tier pricing band, while sustainable grassland management clusters at the lower end of the agri-carbon pricing spectrum. This variability suggests that project subtype selection, even within methodologies

**Chart 8. Price comparison across agri-carbon subtype**



<sup>41</sup> Methodologies within the study's scope were mapped to three agri-carbon project subtypes: regenerative agriculture, sustainable grassland management, and rice cultivation. Sustainable grassland management is included because VM0042 allows for those approaches, which are considered materially different from regenerative agriculture approaches. The full list of methodology mappings is provided in Appendix E.

which allow for diverse approaches such as VM0042, is a significant pricing driver within agri-carbon markets. Agri-carbon's overall wide price dispersion may also be attributed to this variability.

This suggests that the agri-carbon premium observed at the segment level is not evenly distributed across all agri-carbon activities. Rather, it is disproportionately driven by regenerative agriculture, which accounts for most of the high-value transactions and much of the upper-end dispersion seen in the broader agri-carbon sample.

When comparing global agri-carbon subtype pricing to India agri-carbon pricing, the India median price at \$20/t aligns closely with the global rice cultivation band. This may indicate that part of the observed discount for India pricing may reflect project subtype and methodology composition rather than geography alone.

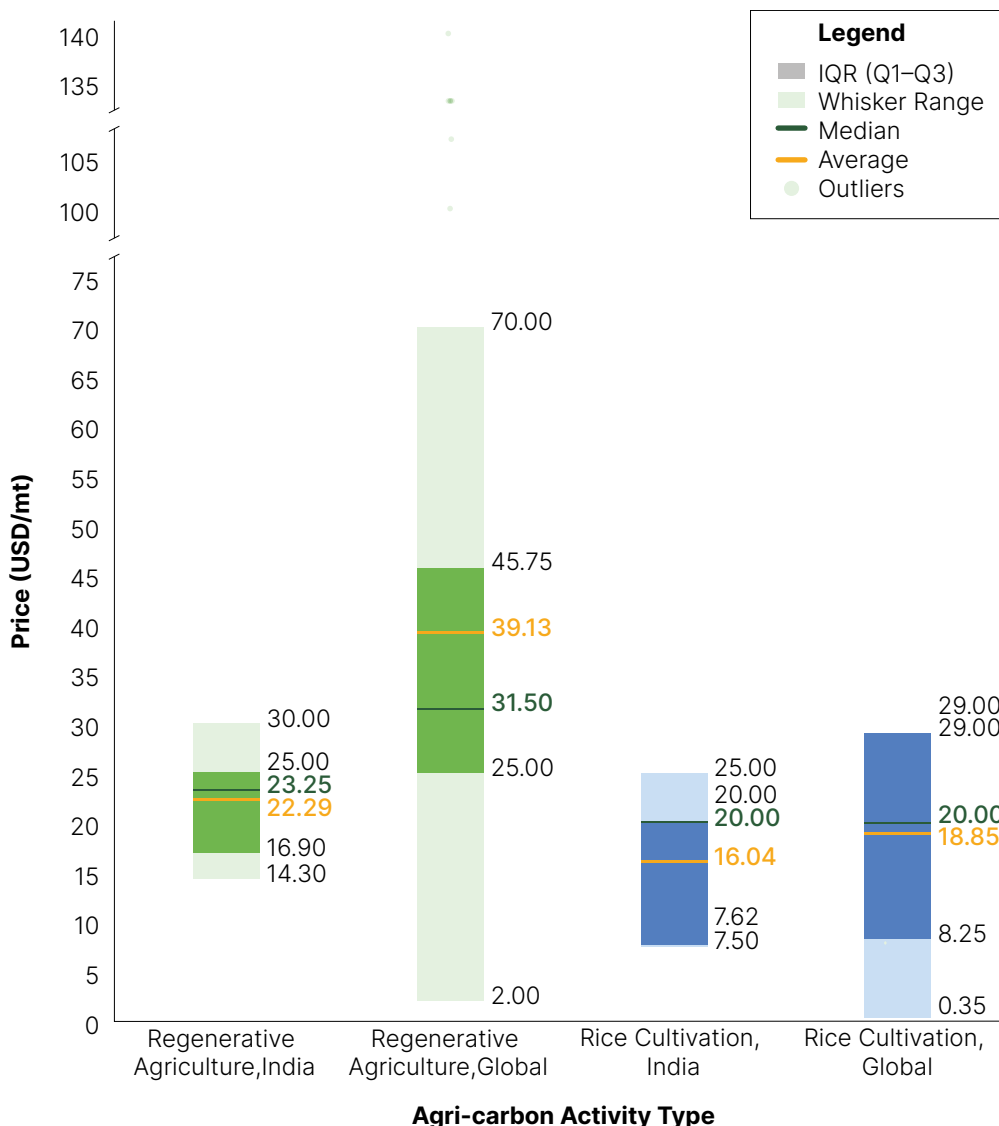
While the alignment between India's aggregate median and the global rice cultivation band suggests compositional effects, a more robust conclusion requires testing geography and project subtype simultaneously. The next step therefore

disaggregates Indian pricing by agri-carbon subtype and compares each against its global equivalent. This two-variable lens allows us to distinguish whether the India discount is primarily a function of project mix or whether a geography-specific discount persists within individual subtypes. There are currently no sustainable grassland management projects in India with pricing data, so this subtype is omitted.

### 5.6. INTERPLAY OF GEOGRAPHY AND PROJECT SUBTYPE IN INDIA AGRI-CARBON PRICING

Within Indian agri-carbon, regenerative agriculture maintains a premium over rice cultivation, consistent with global agri-carbon trends. However, while Indian rice cultivation pricing broadly aligns with global rice cultivation, Indian regenerative agriculture is priced at a material discount to global regenerative agriculture. The median price for Indian regenerative agriculture is at \$23.25/t, while the median for global regenerative agriculture is at \$31.50/t, showing a gap of \$8-\$9/t. This suggests that the observed India discount is not uniform across methodologies.

Chart 9. India agri-carbon by project subtype



Taken together, results from the comparative analysis show that price differentiation within agri-carbon is strongly influenced by geography and project subtype. However, residual pricing gaps in both Indian regenerative agriculture and Indian rice cultivation persist. This suggests that additional project-level variables influence pricing strategy.

To further examine these effects, the next stage of analysis looks at more granular drivers of price formation, such as applied methodology and third-party ratings to assess whether structural quality signals or market perceptions are shaping observed pricing differentials. Importantly, the evidence to this point suggests that India's relative pricing disadvantage is concentrated most clearly in the segment where the largest premium exists globally, namely regenerative agriculture. This makes methodology and project positioning particularly important for Indian projects seeking to narrow the observed discount.

## 5.7. PROJECT-LEVEL DRIVERS OF PRICING DIFFERENTIATION

Among project-level pricing drivers, methodology stringency is the most clearly observable. Within regenerative agriculture and sustainable grassland management, stringent<sup>42</sup> methodologies command a structural premium, with a median price of \$31/t (average price \$38.39/t) compared to \$7/t (average price \$10.88/t) for non-stringent<sup>43</sup> approaches, likely reflecting buyer willingness to pay for stronger additionality tests and more dynamic baseline design.

No consistent premium is observed in rice cultivation, where data composition effects and geography-specific factors make it difficult to isolate any clear methodology-driven signal. Third-party ratings have emerged as an important factor in buyer decision-making more broadly; however fewer than 20% of agri-carbon projects in the dataset carry a rating, limiting the ability to draw robust conclusions at this stage. A fuller discussion of these findings, including distribution analysis, is provided in Appendix F.

## 5.8. SUMMARY OF KEY FINDINGS

In summary, agri-carbon achieves premium pricing within the NbS segment, with a core range of \$20-24/t and significant upside driven by project-specific attributes. Price differentiation is primarily explained by project subtype and methodology, with regenerative agriculture and more stringent methodologies achieving higher premiums. Geographically, Indian agri-carbon projects across all project subtypes have historically seen consistent discounts. Limited market depth and incomplete coverage of quality signals, such as third-party ratings, indicate that pricing remains fragmented and narrative-driven, with no fully established market benchmark.

### What makes a methodology "stringent"?

Stringent methodologies are those that adopt more conservative and dynamic approaches across four key integrity dimensions – additionality, baseline design, MRV and permanence (see Section 3.1).

Typically, these methodologies:

- apply more conservative common-practice thresholds for additionality
- use dynamic baselines that are periodically reassessed
- require direct measurement or robust modelling approaches for MRV, rather than default emission factors
- impose longer monitoring periods and stronger reversal risk mechanisms

The stringent methodologies considered in this report include VM0042, VM0051, GS AWD and CAR SEP.

Methodology stringency matters to buyers because it directly influences the risk of over-crediting and the credibility of emissions reductions. It also aligns with ICVCM CCP assessment outcomes, and is often associated with both higher pricing in the VCM and access to compliance markets.

Taken together, the results point to a clear hierarchy of pricing drivers. At the broadest level, agri-carbon as a category is priced at a premium to most other NbS credit types, but this category-level premium masks substantial internal differentiation. Within agri-carbon, project subtype is one of the strongest observable drivers of price, with regenerative agriculture accounting for much of the segment's premium positioning and upper-end pricing. Geography then further shapes these outcomes, with Indian projects pricing below both global and LMI comparables, although that discount is most economically significant within regenerative agriculture rather than rice cultivation. Methodology adds another layer of differentiation, with stringent approaches commanding a clear premium in regenerative agriculture and sustainable grassland management, but not yet producing a consistently observable premium in rice cultivation.

<sup>42</sup> Stringent methodologies include VM0042, CAR SEP, VM0051 and GS AWD

<sup>43</sup> Non-stringent methodologies by subtype. Regenerative Agriculture: VM0017 (Verra), SCM0005 (Social Carbon), Estimating soil organic carbon sequestration using measurement and models method (ACCU). Sustainable Grassland Management: VM0009 (Verra), VM0026 (Verra), VM0032 (Verra), Avoided Conversion of Grasslands and Shrublands to Crop Production (ACR), Avoided Grassland Conversion - Version 1.0 (CAR). Rice Cultivation: AMS-III.AU (Verra).

These findings suggest that agri-carbon pricing should not be interpreted as a single market benchmark, but rather as a set of differentiated pricing bands shaped by the interaction of subtype, geography, and project quality signals.

The findings in this section support expressing expected soil-carbon pricing as a range rather than as a single point estimate. The lower bound should be anchored to the observed median for the relevant project subtype and geography, while the upper bound should reflect pricing achieved where demonstrable quality signals are

present, including stringent methodology and regenerative agriculture exposure. This corridor-based approach provides more realistic and defensible bounds on achievable pricing than relying on category averages, which mask substantial internal differentiation, or isolated high-end transactions, which in a thinly-traded and narrative-driven market are more likely to reflect bespoke buyer motivations than repeatable market conditions. These pricing dynamics provide the basis for the price assumptions used in the scenario modelling in Section 6.

6

**SCENARIO MODELLING  
– INDIA AGRI-CARBON  
ADDRESSABLE MARKET  
VALUE TO 2030**



This section examines three possible market channels into which Indian agri-carbon credits could be sold across 2026 to 2030 – (1) the voluntary carbon market (VCM), which remains a potential outlet irrespective of progress on compliance policy, (2) Singapore compliance (SG ICC) market and (3) CORSIA. The potential size of each of these markets is estimated across Bear, Base and Bull scenarios to explore the potential value of Indian agri-carbon credits under different market- and policy-assumptions.

### 6.1. SCENARIO FRAMEWORK AND POLICY

All three scenarios assume some progress by India in authorising agri-carbon credits for export. In the event India maintains its current trajectory and does not issue LoAs for

the export of agri-carbon credits, values for compliance markets in sections 6.3 and 6.4 would be zero and only the VCM scenario would apply.

The primary driver of the differences between the three scenarios is the pace and extent of policy action in India, particularly the issuance of LoAs for agri-carbon projects and the speed at which this is administered. Scenario outcomes are also sensitive to the evolution of policy in Singapore, particularly the trajectory of the carbon tax and the offset allowance rate, both of which directly influence the size of potential demand for international carbon credits. Other market conditions, such as VCM demand, CORSIA Phase 1 and Phase 2 volumes, and the Singapore carbon tax rate, are outside of the control of Indian climate policy.

**Table 9. Scenario framework and assumed policy conditions**

Scenario	Assumed policy conditions
BEAR	India authorises agri-carbon credits for export in a limited manner, with narrow LoAs issued at small scale. SG ICC allowance remains 5%. India captures 5% of SG ICC demand. India accounts for 3% share of agri-carbon credits for use in CORSIA.
BASE	India increasingly authorises agri-carbon credits for export, with LoAs issued at moderate scale. SG ICC allowance rate rises to 7.5%. India captures 7.5% of SG ICC demand. India accounts for 7.5% share of agri-carbon credits for use in CORSIA.
BULL	India authorises agri-carbon credits for export widely, with LoAs issued at scale. SG ICC allowance rate rises to 10%. India captures 10% of SG ICC demand. India accounts for 15% share of agri-carbon credits for use in CORSIA.

### 6.2. MARKET CHANNEL 1: VOLUNTARY CARBON MARKET

VCM retirement data is used as a proxy for demand, as retired credits represent confirmed buyer use and provide the clearest, observable signal of market activity. While global agri-carbon credit retirements have typically averaged ~3% of overall VCM retirements, annual retirement of Indian agri-carbon credits has varied widely in the past three years, with a high of ~124,000tCO<sub>2</sub>e retired in 2024. Due to the variance, the model uses a 3-year average of retirements over 2023 to 2025 as a starting baseline – approximately 74,000tCO<sub>2</sub>e. This is equivalent to around 2% of global agri-carbon credit retirements, and represents a small fraction of overall VCM volume retired annually.

Price anchors are derived from the observed distribution of Indian agri-carbon prices in the CIX dataset. The Bear scenario uses the mean of \$18.60/t, Base scenario uses the median of \$20/t, and Bull scenario uses the upper quartile (Q3) of \$24.12/t, reflecting pricing observed for high-integrity projects.

Voluntary demand growth across the scenarios is driven by the rate of increase in corporate participation. This in turn will be determined by several factors, including SBTi's revised Corporate Net Zero Standard, the extent to which it clarifies

the role of carbon markets within corporate sustainability commitments, and its uptake among companies; corporate adoption of VCM's Claims Code of Practice; the effectiveness of market activation efforts like the Coalition to Grow Carbon Markets; and the share of VCM demand captured by agri-carbon credits. The latter will be influenced in part by the speed at which agri-carbon methodologies gain CCP approval, the level of awareness of the benefits of agri-carbon credits among corporates, and pricing dynamics.

Also of significance could be EnterpriseSG's initiative to establish an industry-led buyers' club to drive demand in Asia for high-quality carbon credits. If operationalised, this could create a structure, Singapore-anchored demand pool for voluntary credits. The net demand impact, however, will depend on the corporate composition of the buyers' club – whether it attracts new market entrants or primarily consolidates procurement from existing VCM buyers. While the former would represent genuine increase in voluntary demand, the latter would represent a shift in procurement channel without changing overall volumes.

The key modelling assumptions across Bear, Base and Bull scenarios are set out in the table below. All scenarios assume demand in 2030 increases, by varying levels, as companies act ahead of interim net-zero targets.

Cumulatively, the revenue potential for the VCM channel across 2026-2030 is estimated to be \$6.9 million and \$14.9 million in the Bear and Bull scenarios, respectively. The differential between the two scenarios is low and reflective

of Indian agri-carbon credits trading at a discount to global peers, with a narrowing of the discount expected to happen slowly as credibility grows, global carbon market integrity initiatives gain traction and buyer acceptance rises.

**Table 10. India agri-carbon VCM addressable market value, 2026-2030**

	BEAR SCENARIO	BASE SCENARIO	BULL SCENARIO
<b>Price anchor (2026)</b>	\$18.60/t	\$20.00/t	\$24.12/t
<i>Reasoning</i>	<i>India agri-carbon average price</i>	<i>India agri-carbon median price</i>	<i>India agri-carbon upper quartile price, representative of high-integrity agri-carbon projects</i>
<b>Annual price growth</b>	1.5% per annum	3.5% per annum	6.0% per annum
<i>Reasoning</i>	<i>Conservative estimate in line with long-run inflation of 1.5%-2.0%</i>	<i>Moderate price growth as India discount narrows partially as credibility rises, and some agri-carbon methodologies gain CCP approval</i>	<i>Stronger price growth as India discount narrows meaningfully as credibility rises, and all agri-carbon methodologies gain CCP approval</i>
<b>Price by 2030</b>	\$19.74/t	\$22.95/t	\$30.45/t
<b>Volume growth (2026-2030)</b>	0.5% per annum	5% per annum	10% per annum
<i>Reasoning</i>	<i>Slow corporate participation in VCM; agri-carbon's share of total VCM demand remains largely flat with no structural drivers to shift buyer allocation towards agri-carbon or India-based projects over more established nature-based categories</i>	<i>Moderate corporate participation in VCM; agri-carbon's share of total VCM demand grows moderately as additional agri-carbon methodologies gain CCP approval, buyer awareness of agri-carbon benefits and India-based projects increases</i>	<i>Strong corporate participation in VCM; agri-carbon's share of total VCM demand grows widely as several agri-carbon methodologies gain CCP approval, buyer awareness of agri-carbon benefits and credibility of India-based projects grows</i>
<b>2030 demand uplift</b>	+5%	+12%	+25%
<i>Reasoning</i>	<i>Limited step-up in 2030 demand as few corporates look to actively meet interim 2030 net-zero targets</i>	<i>Modest step-up in 2030 demand as a growing share of corporates act on interim net-zero commitments</i>	<i>Significant step-up in 2030 demand driven by wide corporate participation in carbon markets to meet interim net-zero commitments</i>
<b>5-year cumulative value (2026-2030)</b>	<b>\$6.92 million</b>	<b>\$9.17 million</b>	<b>\$14.22 million</b>

### 6.3. MARKET CHANNEL 2: SINGAPORE COMPLIANCE MARKET

The table below outlines the addressable SG ICC market for India agri-carbon credits under the different scenarios. Total SG ICC demand is comprised of two primary sources – SG ICCs purchased by tax-liable corporates up to their offset allowance, and direct procurement by the Singapore government to meet its NDCs, which is modelled as 5% of Singapore's total emissions. To avoid double counting, the 2.175Mt that have already been contracted by the Singapore government under its first Request for Proposed (RFP1) for delivery from 2026-2030 (equivalent to 0.435Mt/year) is deducted from the total.

India's share of total SG ICC demand is assumed to be 5% (Bear), 7.5% (Base), 10% (Bull). This reflects Singapore's existing network of IAs with other host countries, each with distinct eligibility criteria and potential supply pools, and India's possible supply of Article 6-authorized agri-carbon credits. The Bear scenario assumes narrow LoA coverage by India leaves substantial demand available to Singapore's other bilateral partners. Although India becomes a more significant supplier in the Base and Bull scenarios as its policy matures, competing supply from other host countries continues to limit overall share.

**Table 11. India agri-carbon SG ICC addressable market value, 2026-2030**

							2026	2027	2028	2029	2030	5-year cumulative total (2026-2030)
<b>SG ICC DEMAND INPUTS</b>												
<i>Singapore total emissions (MtCO<sub>2</sub>e)</i> <sup>44</sup>							62.2	63.3	64.4	62.2	60.0	-
<i>Emissions base covered by carbon tax, 80% of total</i> <sup>45</sup> (MtCO <sub>2</sub> e)							49.8	50.7	51.5	49.8	48.0	-
<i>SG Gov NDC procurement, ex. contracted</i> (MtCO <sub>2</sub> e)							2.68	2.73	2.79	2.68	2.57	13.45
<i>Already contracted by SG Gov under its first RFP</i> (MtCO <sub>2</sub> e)							(0.44)	(0.44)	(0.44)	(0.44)	(0.44)	2.18
<b>BEAR SCENARIO</b>												
SG ICC allowance rate							5% (rising to 10% effective in 2026 due to 2025 rollover)					
India agri-carbon share of SG ICC demand							5%					
SG carbon tax (S\$)	45	45	50	50	50	-						
<b>Total SG ICC demand (MtCO<sub>2</sub>e)</b>							7.65	5.26	5.36	5.16	4.97	28.4
<b>India agri-carbon addressable volume (MtCO<sub>2</sub>e)</b>							0.38	0.26	0.27	0.26	0.25	1.42
<b>India agri-carbon market value (US\$)</b>							<b>\$12.75 million</b>	<b>\$8.77 million</b>	<b>\$9.93 million</b>	<b>\$9.56 million</b>	<b>\$9.19 million</b>	<b>\$50.2 million</b>
<b>BASE SCENARIO</b>												
SG ICC allowance rate							7.5% (from 2027; 10% effective in 2026 due to 2025 rollover)					
India agri-carbon share of SG ICC demand							7.5%					
SG carbon tax (S\$)	45	45	55	55	55	-						
<b>Total SG ICC demand (MtCO<sub>2</sub>e)</b>							7.65	6.53	6.65	6.41	6.17	33.4
<b>India agri-carbon addressable volume (MtCO<sub>2</sub>e)</b>							0.57	0.49	0.50	0.48	0.46	2.51
<b>India agri-carbon market value (US\$)</b>							<b>\$19.13 million</b>	<b>\$16.33 million</b>	<b>\$20.33 million</b>	<b>\$19.58 million</b>	<b>\$18.84 million</b>	<b>\$94.2 million</b>
<b>BULL SCENARIO</b>												
SG ICC allowance rate							10% (from 2027; 10% effective in 2026 due to 2025 rollover)					
India agri-carbon share of SG ICC demand							10%					
SG carbon tax (S\$)	45	45	80	80	80	-						
<b>Total SG ICC demand (MtCO<sub>2</sub>e)</b>							7.65	7.80	7.94	7.65	7.37	38.4
<b>India agri-carbon addressable volume (MtCO<sub>2</sub>e)</b>							0.77	0.78	0.79	0.77	0.74	3.84
<b>India agri-carbon market value (US\$)</b>							<b>\$25.51 million</b>	<b>\$25.99 million</b>	<b>\$47.06 million</b>	<b>\$45.35 million</b>	<b>\$43.64 million</b>	<b>\$187.5 million</b>

Note: All values expressed in 2026 USD; no inflation adjustment has been applied. Exchange rate assumed at USD/SGD 1.35. Effective SG ICC allowance in 2026 is 10% under all scenarios due to the rollover of unused 2025 entitlement; scenario-specific rates apply from 2027 onwards.

<sup>44</sup> National Climate Change Secretariat. (11 November 2024). Singapore's first biennial transparency report. [https://www.nccs.gov.sg/files/docs/default-source/publications/Singapore\\_s\\_First\\_Biennial\\_Transparency\\_Report\\_2024\\_LR.pdf](https://www.nccs.gov.sg/files/docs/default-source/publications/Singapore_s_First_Biennial_Transparency_Report_2024_LR.pdf)

<sup>45</sup> Singapore's carbon tax covers approximately 50 industrial facilities, mainly from the power, petrochemical and manufacturing sectors, accounting for roughly 80% of Singapore's total GHG emissions.

The SG ICC allowance rate<sup>46</sup> assumptions from 2027 (Bear 5%, Base 7.5%, Bull 10%) reflect uncertainty around Singapore's policy trajectory beyond the current legislated rate of 5%, alongside the allowance rate rollover approved by the government in 2025. The Base scenario carbon tax of S\$55/t from 2028 is anchored at the lower end of Singapore's legislated S\$50-80/t range, reflecting moderate policy progression above the Bear floor (S\$50/t), but well below the Bull ceiling (S\$80/t).

The step-up in Singapore's carbon tax value from S\$45/t in 2028 reflects Singapore's legislated increase of the carbon tax to S\$50-80/t by 2028-2030, which materially increases the value of SG ICCs in the latter part of the decade. Sensitivity analysis indicates that India's share of SG ICC demand is the more influential driver of outcomes, relative to the SG ICC allowance rate, though the latter remains an important policy lever. Under the Base scenario, doubling India's share from 5% to 10%, while holding the SG ICC allowance rate constant, increases cumulative value from \$63 million to \$126 million, compared to a \$29 million increase from doubling the allowance rate alone.

This highlights that India's ability to capture SG ICC demand (contingent on LoA issuance and the India-Singapore IA) and its competitive position relative to other host countries, are bigger drivers of cumulative market value than the SG ICC allowance trajectory. However, progress on both fronts will be needed to realise the upper end of the modelled range. Full sensitivity analysis is provided in Appendix G.

#### 6.4. MARKET CHANNEL 3: CORSIA

The CORSIA demand pool across Phase 1 and Phase 2 and access to it for Indian agri-carbon credit supply is modelled below. As covered in section 4.6 of this report, India is not participating in Phase 1, but will be a mandatory participant under Phase 2 of CORSIA – the demand sizing and market access assumptions follow from accordingly.

CORSIA Phase 1 prices are anchored to the CIX CORSIA Phase 1 X – Global Markets (CP1X-GM) benchmark using the 2026 year-to-date average spot price of \$16.05/t<sup>47</sup> as the Base scenario anchor for 2026. The Bear scenario discounts this to \$13.50/t, reflecting recent CORSIA market softening; the Bull scenario prices this at \$20/t, reflecting CORSIA offer pricing achieved at the launch of the CP1X-GM contract in December 2025. Across all three scenarios, prices step up in 2027 to \$15/t (Bear), \$22/t (Base) and \$28/t (Bull) as the January 2028 retirement deadline approaches and buyers accelerate procurement.



It is assumed that CORSIA Phase 2 prices rise materially from 2027 in response to the shift to mandatory participation, broadening the demand pool, amid varying supply conditions. The Bear scenario assumes supply of CORSIA Eligible Emissions Units keeps pace with demand and results in a marginal increase in price from \$18/t in 2027 to \$20/t in 2028-2030, keeping prices only marginally above CORSIA Phase 1 levels. The Base scenario assumes moderate supply constraints that raises Phase 2 prices to \$28/t by 2030 from a starting point of \$25/t. In the Bull scenario, a greater supply deficit is assumed, with Phase 2 pricing rising from \$35/t in 2027 to \$40/t in 2028-2030. Agri-carbon credits are assumed to price at the CORSIA market benchmark in all scenarios rather than at a premium, consistent with CORSIA's compliance-driven procurement dynamic (where cost efficiency is the primary driver).

The assessment of India agri-carbon's addressable volume is based on two fixed factors:

- (1) agri-carbon's share of global CORSIA demand varies by scenario (Bear 3%, Base 5%, Bull 7.5%), recognising improving CORSIA methodology coverage while noting the wider CORSIA supply mix several project types including industrial gas, cookstoves, water filtration, jurisdictional REDD+ projects, among others. It is assumed these shares remain constant over time, limited by the structural composition of the market<sup>48</sup> and the fact that access to the CORSIA market is typically driven by discrete policy events, such as the award of an LoA; and
- (2) India's share of that agri-carbon pool varies by scenario – 3% (Bear), 7.5% (Base), 15% (Bull) – and grows year-on-year by 0.5%, 1.5% and 2.5% respectively, meaning India captures a growing share of the global agri-carbon CORSIA pool over time, while agri-carbon's share of total CORSIA demand remains fixed within each scenario.

<sup>46</sup> The SG ICC allowance rate is the percentage of a company's carbon tax liability that can be offset through the use of eligible International Carbon Credits.

<sup>47</sup> Climate Impact X. (2026). CORSIA Phase 1 X – Global Markets (CP1X-GM) Benchmark Price [YTD average 2026 to 9 April 2026, US\$/t].

<sup>48</sup> The total potential CORSIA eligible supply pool represents a wide range of project types across several eligible methodologies, and it is expected this pool will scale alongside agri-carbon; agri-carbon's share of that pool is therefore a function of relative supply across all eligible categories.

Table 12. India agri-carbon CORSIA addressable market value, 2026-2030

	2026	2027	2028	2029	2030	5-year cumulative total (2026-2030)
<b>BEAR SCENARIO</b>						
CORSIA Phase 1 price	\$13.50/t	\$15.00/t	-	-	-	
CORSIA Phase 2 price	-	\$18.00/t	\$20.00/t	\$20.00/t	\$20.00/t	
Agri-carbon share of CORSIA demand	3% of global CORSIA demand					
India share of agri-carbon pool	3%					
<b>Global CORSIA demand (MtCO<sub>2</sub>e)</b>	56.1	86.8	107	115	121	
<b>India agri-carbon addressable volume (MtCO<sub>2</sub>e)</b>	0.050	0.164	0.096	0.104	0.109	0.52
<b>India agri-carbon CORSIA market value (US\$)</b>	<b>\$0.68 million</b>	<b>\$2.72 million</b>	<b>\$1.94 million</b>	<b>\$2.08 million</b>	<b>\$2.19 million</b>	<b>\$9.61 million</b>
<b>BASE SCENARIO</b>						
CORSIA Phase 1 price	\$16.05/t	\$22.00/t	-	-	-	
CORSIA Phase 2 price	-	\$25.00/t	\$28.00/t	\$28.00/t	\$28.00/t	
Agri-carbon share of CORSIA demand	5% of global CORSIA demand					
India share of agri-carbon pool	7.5%					
<b>Global CORSIA demand (MtCO<sub>2</sub>e)</b>	86.8	235.3	134	145	154	
<b>India agri-carbon addressable volume (MtCO<sub>2</sub>e)</b>	0.33	0.89	0.51	0.55	0.59	2.86
<b>India agri-carbon CORSIA market value (US\$)</b>	<b>\$5.22 million</b>	<b>\$20.90 million</b>	<b>\$14.28 million</b>	<b>\$15.45 million</b>	<b>\$16.41 million</b>	<b>\$72.27 million</b>
<b>BULL SCENARIO</b>						
CORSIA Phase 1 price	\$20.00/t	\$28.00/t	-	-	-	
CORSIA Phase 2 price	-	\$35.00/t	\$40.00/t	\$40.00/t	\$40.00/t	
Agri-carbon share of CORSIA demand	7.5% of global CORSIA demand					
India share of agri-carbon pool	15%					
<b>Global CORSIA demand (MtCO<sub>2</sub>e)</b>	98.8	283.8	161	175	187	
<b>India agri-carbon addressable volume (MtCO<sub>2</sub>e)</b>	1.11	3.19	1.81	1.97	2.10	10.19
<b>India agri-carbon CORSIA market value (US\$)</b>	<b>\$22.23 million</b>	<b>\$100.89 million</b>	<b>\$72.45 million</b>	<b>\$78.75 million</b>	<b>\$84.15 million</b>	<b>\$358.47 million</b>

Note: Phase 1 total offsetting obligation (2024–2026): Bear 145.8 Mt, Base 202.6 Mt, Bull 236.6 Mt (IATA August 2024; ICAO range). Phase 2 annual demand sourced from IATA September 2023 projections.

## 6.5. SUMMARY ACROSS MARKET CHANNELS

The cumulative totals across all market channels and scenarios are set out in the table below.

**Table 13. Summary of India agri-carbon addressable market value across all channels, 2026-2030**

Market Channel	Bear (5-yr cumulative, 2026-2030)	Base (5-yr cumulative, 2026-2030)	Bull (5-yr cumulative, 2026-2030)
VCM	\$6.92 million	\$9.17 million	\$14.22 million
SG ICC	\$50.22 million	\$94.20 million	\$187.55 million
CORSIA	\$9.61 million	\$72.27 million	\$358.47 million
<b>TOTAL</b>	<b><u>\$66.75 million</u></b>	<b><u>\$175.64 million</u></b>	<b><u>\$560.24 million</u></b>

The SG ICC and CORSIA models adopt different approaches to estimating India's addressable share, reflecting the structural differences between the two markets. The SG ICC model applies India's share directly to total demand, consistent with the bilateral IA structure through which Singapore allocates eligible supply by host country. In contrast, the CORSIA model applies a two-stage filter, first estimating agri-carbon's share of total demand, and then India's share of that pool. This reflects the undifferentiated global market in which agri-carbon competes alongside other eligible project types.

The scenario analysis leads to three clear findings:

### 1. Contribution of compliance channels varies across scenarios

SG ICC is the dominant market outlet for India agri-carbon credits in the Bear scenario, despite representing a smaller share of total demand volume. This reflects the price premium that SG ICCs are expected to command relative to CORSIA-eligible credits, driven by the structure of the Singapore carbon tax and its role as a price-supported compliance market with a predictable buyer base. In the Base scenario, SG ICC remains ahead at \$94.20 million, though the gap narrows considerably – CORSIA reaches \$72.27 million as

agri-carbon's share of the eligible pool grows. In the Bull scenario, CORSIA becomes the larger channel at \$358.47 million, as scale effects dominate.

### 2. Compliance access materially expands the addressable market

Even in the most conservative scenario, access to compliance markets transforms demand. The Bear scenario total (\$66.75 million) is nearly ten times the VCM-only floor (\$6.92 million); the Bull scenario total (\$560.24 million) is nearly forty times larger than the VCM-only floor (\$14.22 million). This reflects the structural advantage of compliance markets, where policy-driven demand and pricing mechanisms provide depth that cannot be replicated in the VCM.

### 3. Outcomes are highly sensitive to policy decisions within India's control

The total addressable market for Indian agri-carbon credits ranges from ~\$67 million in the Bear scenario to ~560 million in the Bull scenario, driven largely by the pace of LoA issuance, the scope of Article 6.2 eligibility and the ambition of the India-Singapore IA. In all scenarios, VCM demand remains the floor, accessible regardless of compliance market progress, but not a source of scale.

7

# IMPLICATIONS & RECOMMENDATIONS



The report identifies a set of practical implications and recommendations for policy and commercial stakeholders, prioritised by importance.

## 7.1. PURSUE ARTICLE 6.2 AUTHORISATION FOR AGRICULTURAL ACTIVITIES

A key constraint to market access identified in this report is India's exclusion of agriculture from the list of Article 6.2 eligible activities. In the absence of LoAs for Indian agri-carbon credits, access to Singapore's compliance market, as well as CORSIA and other emerging Article 6.2 markets remains out of reach, irrespective of methodology or project readiness. The scenario analysis indicates that, in the absence of compliance access, the addressable market for Indian agri-carbon credits will be limited to the VCM, with significantly lower revenue potential compared to pathways unlocked by Article 6.2 authorisation.

Addressing this will require continued engagement with NADAIPA to support the inclusion of agriculture within its list of eligible Article 6.2 activities. This should focus on methodologies with significant potential in India in particular, including AWD rice cultivation and improved nutrient management.

Due consideration should also be given to address NADAIPA's primary concerns:

- **Permanence:** demonstrating robust safeguards through buffer pools and long-term monitoring aligned with international standards;
- **Additionality:** showing strong justification under Indian farming conditions;
- **NDC alignment:** ensuring compatibility with India's national accounting requirements.

In addition to decarbonisation, emphasis should be placed on co-benefits achieved from supporting agri-carbon activities, including improved farmer welfare, rural development and the adoption of innovative farming practices and technology, which are closely aligned with the Indian government's broader policy objectives.

A policy shift to incorporate agri-carbon within its Article 6.2 framework will also be of relevance for CORSIA. While India is not a participant in CORSIA Phase 1, it will become a mandatory participant from 2027, under Phase 2. Enabling domestic supply of authorised agri-carbon credits<sup>49</sup> could support Indian airlines in meeting their compliance needs, while ensuring the value stays within country and benefits smallholder farmers. Given projected supply constraints for CORSIA-eligible credits, India is well-positioned to emerge as a scaled supplier of authorised agri-carbon credits.

This makes a compelling case for including agricultural activities within India's Article 6.2 framework, unlocking



significantly greater market access and value for Indian agri-carbon projects and the wider farming sector.

## 7.2. ADVANCE THE INDIA-SINGAPORE IMPLEMENTATION AGREEMENT

An India-Singapore IA under Article 6.2 is a prerequisite to access Singapore's compliance market, and is likely to progress on a diplomatic rather than commercial timeline. Singapore's carbon tax framework operates exclusively through such agreements, meaning credits from host countries without an IA with Singapore are not eligible for use. While an India-Singapore IA is yet to be negotiated, Singapore's existing bilateral agreements have included agri-carbon methodologies, such as VM0042 and GS AWD, establishing a precedent for their inclusion.

In the near term, there is value in ensuring that agri-carbon is considered from the outset of IA discussions. This includes raising awareness of the agri-carbon opportunity with NADAIPA and the relevant Singapore government agencies involved in Article 6 processes, and supporting the inclusion of appropriate agri-carbon methodologies in emerging bilateral frameworks.

In the longer term, India's domestic Carbon Credit Trading Scheme (CCTS) may also serve as a signal of carbon market maturity. A well-functioning domestic CCTS could build institutional experience and capabilities which could in turn support participation in international carbon markets, including for agri-carbon.

## 7.3. ENGAGE SINGAPORE ON THE SG ICC ALLOWANCE RATE TRAJECTORY

Scenario modelling in Section 6.2 identifies the SG ICC allowance rate as the second most important variable influencing the addressable market for Indian agri-carbon credits, after India's issuance of LoAs. Under the Bear scenario, an increase of the allowance rate from 5% to 10%, holding all other factors constant, translates to gains

<sup>49</sup> Authorisation under Article 6 of the Paris Agreement, via a Letter of Authorisation issued by India, will be required for Indian credits to be used for CORSIA compliance. See Section 4.6.

in cumulative market value from \$50 million to \$68 million. Under the Base scenario, the same shift in allowance rate while keeping other factors constant, raises cumulative market value from \$53 million to \$72 million.

As a policy lever, the case for a higher allowance rate is set to become increasingly stronger as more high-integrity Article 6.2 supply comes online. Continued engagement with the relevant Singapore government agencies can help clarify its trajectory and support consideration of its expansion.

#### 7.4. PRIORITISE CCP-ELIGIBLE METHODOLOGIES FOR NEW PROJECTS

For projects currently under development, priority should be given to methodologies that currently have CCP approval (e.g. VM0042) or are under active assessment (e.g. VM0051, GS AWD). CCP labelling enhances a project's VCM potential and offers a credible integrity signal to buyers, even ahead of formal compliance eligibility. This is further evidenced by market data, which suggests that CCP-approved credits can command a premium of up to 25%<sup>50</sup>. Conversely, projects developed under non-CCP methodologies face increasing market access risk as more stringent integrity criteria are applied to both voluntary and compliance markets.

VM0042 and GS AWD are already included in the eligibility list of several of Singapore's existing IAs and are CORSIA eligible. These are therefore the most market-ready methodologies to seek access across both compliance market channels. VM0051, also now confirmed as CORSIA-eligible, further strengthens the compliance case for rice cultivation projects. In each case, the primary constraint on market access is less the methodology and more India's issuance of LoAs.

Section 5.4 also identifies an India-specific discount of approximately \$6/t below the global average and \$8/t below comparable projects in other low- and middle-income countries. This suggests that methodology selection, while a contributor, is not the only factor influencing the pricing discount, with buyer sentiments around credibility and market confidence also at play.

As Indian agri-carbon projects establish a track record of delivery, transparency and performance in international carbon markets, this discount is likely to narrow, highlighting the importance of anchoring project design in high-integrity methodologies.

Project design should also reflect the growing emphasis that integrity frameworks are placing on co-benefits and social



<sup>50</sup> Integrity Council for the Voluntary Carbon Market. (16 December 2025). Core Carbon Principles Impact Report 2025. <https://icvcm.org/wp-content/uploads/2025/12/IC-Impact-Report-2025-V7.1-16Dec25.pdf>



safeguards. The ICVCM's CCP framework includes guidance on gender considerations and equitable benefit sharing as part of its broader social safeguards. While not yet a formal requirement, projects that can demonstrate inclusive benefit distribution, attention to gender equity and other co-benefits are likely to be better positioned as standards tighten.

## 7.5. ASSESS EMERGING DEMAND PATHWAYS IN THE VOLUNTARY MARKET

While the VCM alone is unlikely to drive demand at the scale of compliance markets, it remains an important source of near-term activity as compliance pathways develop. Quality-conscious voluntary buyers, particularly corporates with agricultural supply chains looking to address Scope 3 emissions, represent a potential near-term market, and some may prefer to engage through supply chain insetting.

As Scope 3 reporting expectations tighten and CBAM increases pressure on exporters to reduce embedded emissions, corporates with Indian agricultural supply chains have increasing incentives to fund emission reductions within their own value chains. Emerging standards, such as Verra's Scope 3 Standard Programme, may provide a more structured path to access such demand over time.

Looking ahead, additional demand drivers, including buyers' coalitions and new buyer use cases, may further expand the voluntary market opportunity for Indian agri-carbon credits.

## Looking ahead: emerging demand opportunities for agri-carbon

Two emerging developments could further shape demand for agri-carbon credits.

EnterpriseSG's initiative to establish an industry-led buyers' club to drive demand in Asia for high-quality carbon credits, if operationalised, could create a structured, Singapore-anchored demand pool for voluntary credits. Its net demand impact will depend on whether it attracts new market entrants or primarily consolidates procurement from existing VCM buyers; while the former would represent genuine increase in voluntary demand, the latter would represent a shift in procurement channel without changing overall volumes.<sup>51</sup>

The rise of new buyer use cases could also influence demand. Data centres, in particular, may represent a potentially new class of agri-carbon buyer with specific co-benefit requirements. AWD agri-carbon credits deliver both emissions reductions and measurable water savings, an increasingly relevant combination for data centres, which face growing pressure to demonstrate sustainability across carbon and water usage. The concept of fractionalised carbon credits, where credits are split into smaller units, could enable data centre operators to link agri-carbon credits more directly to compute activity, moving beyond bulk procurement towards attribution at the workload level.

While still nascent, such developments could offer a differentiated route to market for Indian agri-carbon credits, and warrant further exploration as both carbon markets and data centre sustainability frameworks evolve.

<sup>51</sup> As EnterpriseSG's buyers' club initiative is currently in development and its membership and procurement volumes are not yet known, no incremental demand from the buyers' club has been modelled in the scenario analysis.

# APPENDIX



## APPENDIX A – METHODOLOGY INTEGRITY CONSIDERATIONS

The four integrity dimensions summarised in Section 3.1 – additionality, baseline design, MRV and permanence – vary materially across the agri-carbon methodologies in scope. This appendix examines each in turn, outlining what it captures, how different methodologies approach it, and the implications for over-crediting risk and buyer confidence. For the methodologies which are not included in this

pricing analysis, this is largely a result of the absence of issued projects under those methodologies, or insufficient pricing data available in the market. Notably, the VM0042 methodology covers both approaches to regenerative agriculture and sustainable grassland management, which are distinguished in the data and charts.

Methodology	Additionality	Baseline design	MRV and quantification	Permanence
CAR SEP	Uses a negative list and county-level adoption data; practices above ~50% adoption are excluded as common practice.	Based on field-specific historical practices prior to project start, with reassessment at crediting period renewals using updated local and regional data, and a planned transition to a blended baseline in later periods.	SOC is directly measured at project start and at least every five years to a minimum depth of 30 cm. Emissions and removals are quantified using process-based biogeochemical models, parameterised with field-specific activity data. Issuance is based on the 30th percentile of the average emissions reduction	Permanence is managed through a legally binding agreement requiring compensation of any soil carbon reversals, with project-level liability enforced through mandatory credit retirements.
VM0042	Uses a 20% common-practice threshold, with flexibility to assess combined practices where data is limited.	Minimum three-year historical look-back period, with emissions either modelled or directly measured at control sites. Subject to reassessment at each crediting period renewal.	Uses measurement-based approaches or limited default factors. Credited outcomes are conservatively adjusted for uncertainty using a statistical deduction based on the lower-confidence estimate.	Reversal risk is managed through the VCS shared AFOLU buffer pool.
GS SOC Framework Methodology	Allows investment/barrier analysis or CDM tools, giving flexibility in data-constrained contexts.	Baseline scenario is the continuation of the historical land management practices that are being followed in last 5 years before the project start date.	Quantification uses direct SOC measurements, conservative models, or IPCC Tier 1 or Tier 2 default factors (preferably Tier 2), with credited outcomes adjusted downward where uncertainty exceeds a $\pm 20\%$ precision threshold at 90% confidence.	Monitoring data must be electronically archived for up to two years after the end of each crediting period, and 20% of issued credits are contributed to the Gold Standard buffer pool to manage reversal risk.
VM0051	Requires a regulatory surplus test, a barrier analysis, and a common practice test	Minimum three-year historical look-back period, with emissions estimated through modelling, measurement, and/or default factors. Subject to reassessment at each crediting period renewal and automatically adjusted upwards as practices change regionally or as weather conditions shift.	Quantification relies on modelled or measured data, with default emission factors permitted only for smaller projects and subject to a standardised uncertainty deduction.	Projects generate permanent emissions reductions and are hence not required to contribute to a buffer pool.
GS Methane Emission Reduction by Adjusted Water Management Practice in Rice Cultivation	Allows investment/barrier analysis or CDM tools, giving flexibility in data-constrained contexts.	Baseline assumes the continuation of existing flooding practices and established using at least three reference fields within the project area, with emissions measured directly or estimated using national data or IPCC default factors.	Baseline and project emissions may be estimated using the developer's own field experiments, or alternatively using national data or IPCC Tier 1 default values, with methane emissions quantified through closed-chamber measurements.	
CAR U.S. Rice Cultivation Protocol	Requires a performance standard test and a legal requirement test, supported by formal attestation	Fields must show a five-cycle history of rice cultivation, with each cycle flooded for at least 100 days. Baseline emissions are calculated using DNDC v9.5, based on 20 years of field data and uncertainty assessed via Monte Carlo analysis.	CO <sub>2</sub> and CH <sub>4</sub> emissions must be quantified using the DNDC model.	

## **ADDITIONALITY**

Additionality is one of the cornerstones of carbon markets and refers to whether emission reductions or removals that are achieved in relation to an established baseline, would not have occurred in the absence of carbon finance.<sup>52</sup> Additionality remains one of the most contentious issues in carbon markets, and in agri-carbon credits in particular, where practices such as improved water management, fertiliser optimisation, or improved agricultural land management may already be incentivised through public policies or subsidies, making it challenging to assess additionality.

The ICVCM CCPs allow additionality to be demonstrated through investment- or barrier-analysis, combined with a common-practice or market penetration assessment, or alternatively through standardised approaches. Methodologies that link additionality tests as such are generally considered more robust and less disputable by buyers. For instance, the CAR SEP methodology uses a negative list approach based on county-level adoption data, which screens out practices deemed common within the underlying region, with a 50% common-practice threshold. In comparison, Verra's VM0042 assesses additionality against a 20% common-practice threshold (where common practice is defined as greater than 20% adoption). The ICVCM cites this 20% threshold as a "typical benchmark" for common practice assessments, but notes that VM0042 can assess combined adoption<sup>53</sup>; where combined adoption exceeds 20%, project proponents may provide verifiable evidence that the practice is still not common and therefore additional. This makes VM0042 comparatively more flexible where adoption level data is incomplete, or where practices are implemented in combination.

Verra's VM0051 incorporates dynamic baseline elements that allow additionality conditions to tighten over time as practices are more widely adopted. In comparison, the CAR U.S. Rice Cultivation Protocol assesses additionality based on low observed adoption rates in California (approximately 3-7% depending on practice, reflecting a conservative U.S. context). However, such levels may be too low and difficult to operationalise in countries with less reliable or poor data. The Gold Standard methodologies offer a range of options for demonstrating additionality, including CDM additionality tools<sup>54</sup>, and therefore countries/projects have the flexibility to choose an approach best suited to their context; this may be particularly useful for smallholders in LDCs amid data-constraints. However, this approach can be more subjective

and could lead to more scope for different interpretations, particularly in barrier analysis.

The convergence of voluntary and compliance markets, has also prompted calls for additionality tests to be updated to include not only baseline emissions, but also to reflect a host country's own NDCs to avoid any unintended consequence of crediting and sale of carbon credits that do not represent additional or genuine reductions or removals in greenhouse gases.<sup>55</sup>

These differences suggest that methodologies with more structured and dynamic approaches to additionality are likely to be viewed as more robust by buyers, particularly as integrity expectations continue to tighten.

## **BASELINE DESIGN**

Alongside additionality, having a robust baseline is critical to ensuring carbon projects are of high integrity. The baseline determines the business-as-usual (BAU) scenario against which any change in emissions, such as reductions or removals, can be measured. It has a large impact on the volume of credits issued, and the use of non-conservative baselines is a well-established driver of over-crediting risk.<sup>56</sup> This can significantly impact buyer perception of integrity and credibility of the project.

According to ICVCM's CCPs, maintaining conservatism in baseline design is important. The use of assumptions and data which may not be relevant or robust enough for the specific context has been highlighted as a challenge. The market disruption that resulted from the use of outdated counterfactuals in legacy methodologies, such as the suspension of 37 rice projects using the legacy CDM methodology AMS-III.AU,<sup>57</sup> highlights how weak baselines and evidence frameworks can have material impact on project integrity and market confidence.

The different approaches to baseline design in soil carbon methodologies are evident when comparing Verra VM0042, CAR SEP and Gold Standard SOC. As per Verra VM0042 and CAR SEP, the baseline scenario is determined by a historic look-back period to identify actual pre-project management activities on each land parcel included in a project. Reassessment triggers are well-defined, with Verra VM0042 requiring five-year reassessment where practices change rapidly, reducing the risk of static counterfactuals as farming practices evolve. In comparison, projects under

<sup>52</sup> Additionality in carbon markets typically refers to financial additionality (whether carbon revenues enable project viability), but can at times also relate to regulatory additionality (whether activities go over and above what may be legally required).

<sup>53</sup> The adoption rate of multiple practices implemented together rather than each practice individually.

<sup>54</sup> The ICVCM CCP Assessment Framework does not explicitly recognise CDM additionality tools as a preferred approach and has encouraged programmes relying on them to revise methodologies to better align with CCP additionality expectations. As a result, methodologies relying primarily on CDM-based tools could face greater challenges in obtaining CCP approval compared with approaches more closely aligned with CCP additionality guidance.

<sup>55</sup> Michaelowa, A., Hermwille, L., Obergassel, W., & Butzengeiger, S. (2019). Additionality revisited: guarding the integrity of market mechanisms under the Paris Agreement. *Climate Policy*, 19(10), 1211–1224. <https://doi.org/10.1080/14693062.2019.1628695>

<sup>56</sup> Haya, B., Cullenward, D., Strong, A. L., Grubert, E., Heilmayr, R., Sivas, D. A., & Wara, M. (2020). Managing uncertainty in carbon offsets: insights from California's standardised approach. *Climate Policy*, 20(9), 1112–1126. <https://doi.org/10.1080/14693062.2020.1781035>

<sup>57</sup> Verra. (28 August 2024). Verra rejects China rice cultivation projects, sanctions auditing firms and project proponents. <https://verra.org/verra-rejects-china-rice-cultivation-projects-sanctions-auditing-firms-and-project-proponents/>

the Gold Standard SOC methodology can use either literature- or parameter-based inputs, which gives some flexibility for project design and implementation but also increases variability in interpretation. Baseline design is therefore a key factor in how credit quality is assessed. For example, BeZero Carbon evaluates not only how baseline scenarios are constructed, but also the frequency with which they are reassessed as part of its methodology screening. Methodologies that incorporate more stringent approaches – including periodic reassessment – are generally viewed as reducing the risk of over-crediting and improving confidence in credited outcomes.

For rice methane methodologies, baseline evaluation follows a slightly different approach. Due to the nature of methane reduction activities, which result from changes in water management and cultivation practices, buyer focus is often placed on the quality and frequency of monitoring data. Methodologies such as Verra's VM0051 and Gold Standard's AWD methodology have tightened requirements on the quality of activity data and require baseline reassessments ahead of crediting period renewals. The requirements under these methodologies for robust baselines, while being dynamic enough to capture changes in farmer practices, are consistent with the requirements under ICVCM's CCPs. Dynamic baselines are also promoted in the nascent Article 6.4 market, where methodologies are required to be progressively more stringent in terms of their baselines, including downward adjustments over time to prevent over-crediting.<sup>58</sup>

Differences in baseline design directly influence over-crediting risk and, in turn, buyer confidence and perceived credit quality.

## **MEASUREMENT, REPORTING AND VERIFICATION (MRV) AND QUANTIFICATION APPROACHES**

MRV frameworks and quantification approaches are equally relevant to the credibility of methodologies and buyer acceptance. The variations in MRV mechanisms, such as direct measurement, modelling approaches, default emission factors and the way uncertainty is managed have a direct impact on credited volumes and perceived integrity of the project.

All three soil organic carbon (SOC) methodologies considered – Verra's VM0042, CAR SEP and Gold Standard SOC – require direct measurements for establishing baselines and measuring changes in SOC stock. However they differ in their treatment of default factors and modelling requirements. CAR SEP is the most restrictive and does not allow default factors, instead requiring measured or model-derived project-specific data. In

comparison, Verra's VM0042 and Gold Standard's SOC<sup>59</sup> allow default factors for certain non-SOC emission sources.

Rice methane methodologies differ structurally from SOC as they quantify avoided methane emissions from activity changes rather than the increase in CO<sub>2</sub> sequestered. The focus of MRV is thus on the accuracy of activity data and the emission factors modelled. Verra's VM0051 and Gold Standard's AWD methodologies require the direct measurement of key activity parameters (e.g. flooding regimes), and allow the use of default emission factors where applicable. However, CAR U.S. Rice only allows default emission factors for indirect N<sub>2</sub>O emissions, and only within the regulatory context of California.

While allowing the use of default factors gives projects more flexibility, especially for smallholders and in LDC where data may be limited, buyer confidence is strongly influenced by the associated level of conservatism in factors used.

Variations in MRV approaches affect both the accuracy of credited volumes and the level of confidence buyers place in the project, making it a key driver of market acceptance.

## **PERMANENCE**

Permanence considerations are similarly key to how projects are perceived. In order to achieve CCP eligibility, ICVCM requires projects with high reversal risk to adopt a minimum 40-year monitoring and compensation period<sup>60</sup>, highlighting the importance of durability considerations.

Verra's VM0042 is aligned with Verra's updated AFOLU requirements, which call for a minimum 40-year permanence period with a shared buffer pool to mitigate reversal risk.

Under CAR SEP, permanence is ensured through legally binding Project Implementation Agreements (PIAs), which require projects to monitor and compensate for reversals over a 100-year period, with reporting at least once every five years. In the event of a project area incurring a net reversal of carbon stocks, the total net soil carbon loss must be accounted for and compensated through credit retirements. This approach results in project-level liability as opposed to a sector-wide risk sharing mechanism as provided by shared buffer pools.

For Gold Standard SOC, the permanence risk is managed through the use of buffer pool contributions and monitoring obligations.

In comparison to SOC methodologies, there is a structural difference in permanence risk management for the rice methane avoidance methodologies (VM0051, GS AWD, CAR

<sup>58</sup> UNFCCC. (25 October 2022) Information note: Requirements for the development and assessment of mechanism methodologies. Version 2.0. <https://unfccc.int/sites/default/files/resource/a64-sb003-aa-a06.pdf>

<sup>59</sup> GS SOC allows the use of models depending on the selected module, with a preference for country- or project-specific parameters (often referred to as Tier 2 approaches in IPCC guidance) parameters over generic default emission factors (also known as Tier 1 factors in IPCC guidance), which generally improves accuracy.

<sup>60</sup> On 18 February 2026, ICVCM launched its second Continuous Improvement Work Program (CIWP) focused on strengthening the permanence and durability of carbon credits, including the possibility of exploring options for extending the 40-year monitoring and compensation period.

U.S. Rice). Under these methodologies, resulting emissions reductions are considered permanent once achieved, and therefore do not require the use of buffer pools or long-term post-crediting monitoring.

Permanence considerations are critical to how credits are valued, with longer monitoring periods and stronger risk mitigation mechanisms generally viewed as enhancing durability and buyer confidence.

## APPENDIX B – AGRI-CARBON CREDIT TYPES BY METHODOLOGY

Comparison table showing whether each methodology typically credits emissions reductions (avoided emissions), carbon removals (carbon sequestration), or generates mixed credits (i.e., both credit types).

Methodology	Reductions (avoided GHG emissions)	Removals (carbon sequestration)
CAR SEP	✓	✓
VM0042	✓	✓
GS SOC Framework Methodology	✓	✓
VM0051	✓	✗
GS Methane Emission Reduction by Adjusted Water Management Practice in Rice Cultivation	✓	✗
CAR U.S. Rice Cultivation Protocol	✓	✗

## APPENDIX C – SINGAPORE'S ENVIRONMENTAL INTEGRITY CRITERIA

Principle	Definition
To comply with Article 6 of the Paris Agreement, the certified emissions reductions or removals must have occurred between 1 January 2021 and 31 December 2030.	
<b>Not double-counted</b>	The certified emissions reductions or removals must not be double counted in contravention of the Paris Agreement.
<b>Additional</b>	The certified emissions reductions or removals must exceed any emissions reduction or removals required by law or any regulatory requirement of the host country, and that would otherwise occur in a conservative, business-as-usual scenario.
<b>Real</b>	The certified emissions reductions or removals must have been quantified based on a realistic, defensible, and conservative estimate of the amount of emissions that would have occurred in a business-as-usual scenario, assuming the project or programme that generated the certified emission reductions or removals had not been carried out.
<b>Quantified and verified</b>	The certified emissions reductions or removals must have been calculated in a manner that is conservative and transparent, and must have been measured and verified by an accredited and independent third-party verification entity before the ICC was issued.
<b>Permanent</b>	The certified emissions reductions or removals must not be reversible, or if there is a risk that the certified emissions reductions or removals may be reversible, there must be measures in place to monitor, mitigate and compensate any material reversal of the certified emissions reductions or removals.
<b>No net harm</b>	The project or programme that generated the certified emissions reductions or removals must not violate any applicable laws, regulatory requirements, or international obligations of the host country.
<b>No leakage</b>	The project or programme that generated the certified emissions reductions or removals must not result in a material increase in emissions elsewhere, or if there is a risk of a material increase in emissions elsewhere, there must be measures in place to monitor, mitigate and compensate any such material increase in emissions.

## APPENDIX D – DETAILED METHODOLOGY FOR PRICING ANALYSIS

The data used in the analysis were drawn primarily from CIX proprietary market pricing datasets and were supplemented with publicly available sources. For agri-carbon, the dataset comprises discrete bids, offers, and trades associated with both specific projects and generic geography-based projects. For nature-based solutions (NbS), the dataset includes bids, offers, and trades for discrete projects. Given the relatively limited liquidity within the agri-carbon segment, both confirmed transactions and indicative market quotes are included to reflect observable market pricing signals and prevailing market size.

The total sample includes 339 data points for agri-carbon and 20,415 data points for NbS projects. All price observations are expressed in USD per metric tonne (USD/t) and represent observed market pricing between 2022 and 2026.

The comparative analysis consists of two stages. First, a high-level comparative analysis is conducted between agri-carbon projects and other major NbS project types. Second, the analysis focuses specifically on agri-carbon projects, examining potential determinants of price, including geographic location, project subtype, methodology, registry, and other relevant variables. This staged approach allows for initial market positioning before isolating explanatory drivers of price formation within the agri-carbon segment.

To evaluate pricing patterns across these variables, descriptive statistical techniques are employed, including box-and-whisker plots to interpret distributional characteristics, and bubble charts to visualise the relationship between relative market participation (proxied by frequency of observed pricing) and pricing levels. Median pricing and interquartile ranges are emphasised to mitigate distortion from extreme outliers and to interpret central pricing tendencies.

The analysis is descriptive rather than causal. Observed pricing differentials should therefore be interpreted as indicative market patterns rather than definitive evidence of isolated causal effects. This distinction is particularly important in a thinly traded market, where some segments may be disproportionately influenced by repeated observations from a limited number of projects.

Several data limitations should therefore be noted upfront. First, the dataset combines confirmed transactions and indicative quotes in order to reflect prevailing market colour in a low-liquidity segment. Second, not all project-level variables are consistently observable across the full sample, including issuance status, contract structure, and buyer type. Third, some project subtypes are affected by concentration of observations from individual projects. Accordingly, the analysis is best understood as a pricing framework that identifies directional market signals and defensible pricing corridors.

## APPENDIX E – SUBTYPE TO METHODOLOGY MAPPING

To more concisely illustrate the pricing differences within agri-carbon, the methodologies within this study's scope have been mapped to three agri-carbon project subtypes: regenerative agriculture, sustainable grassland management, and rice cultivation. Sustainable grassland management is included because VM0042 allows for those approaches, which are deemed materially different from regenerative agriculture approaches.

The data referenced in the study's charts pertaining to agri-carbon pricing covers the following methodologies,

highlighted in green. Additional methodologies included are highlighted in blue, for the purpose of increasing the number of datapoints available for analysis:

For the methodologies which are not included in this pricing analysis, this is largely a result of the absence of issued projects under those methodologies, or insufficient pricing data available in the market. Notably, the VM0042 methodology covers both approaches to regenerative agriculture and sustainable grassland management, which are distinguished in the data and charts.

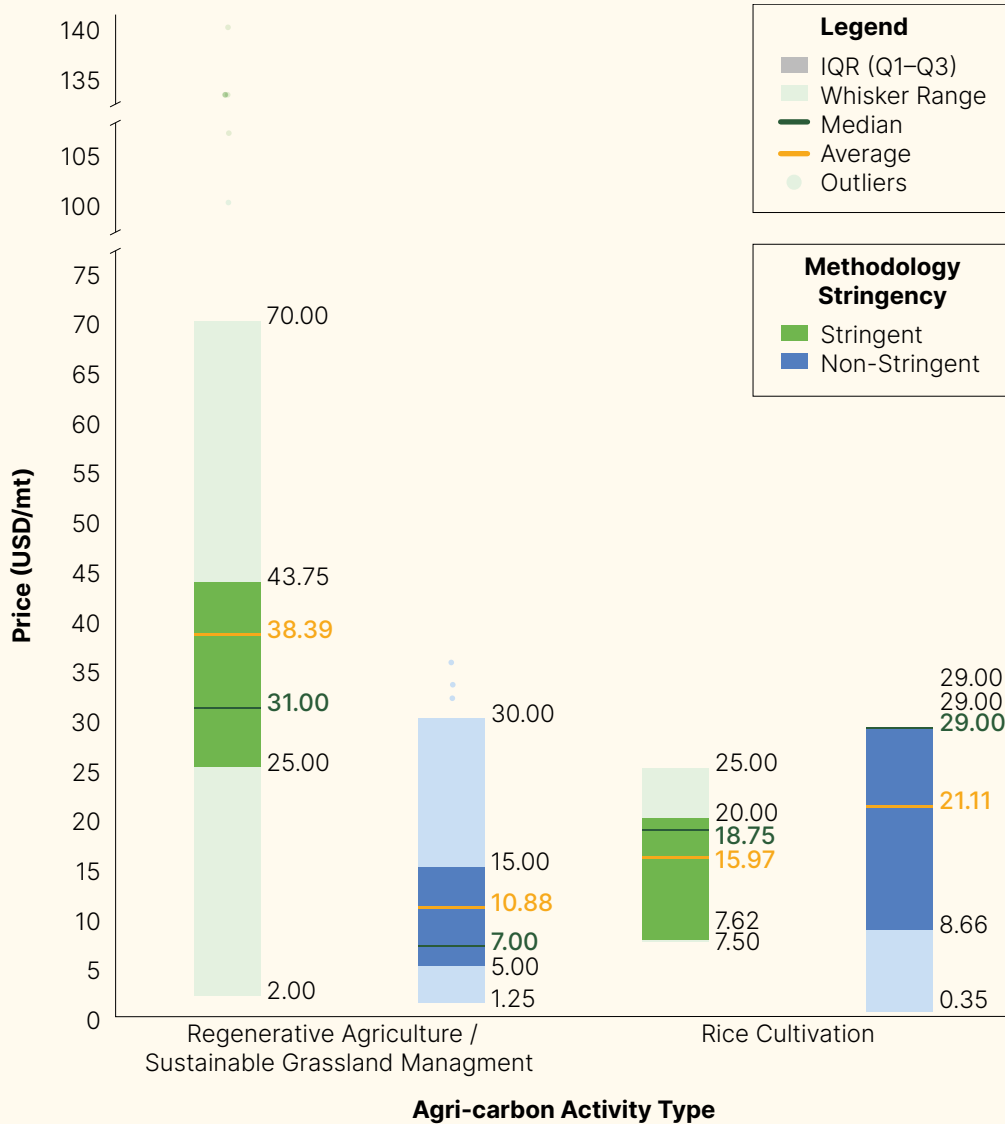
Standard/Registry	Methodology	Primary mitigation mechanism	ICVCM CCP Status	Agri-carbon subtype
Verra	VM0009 (now inactive)	Avoided soil carbon loss from grassland conversion	Not assessed – methodology inactive	Sustainable Grassland Management
	VM0017 (now inactive)	Soil organic carbon sequestration	Not assessed – methodology inactive	Regenerative Agriculture
	VM0026 (now inactive)	Soil organic carbon sequestration	Not assessed – methodology inactive	Sustainable Grassland Management
	VM0032	Soil organic carbon sequestration	Not yet assessed	Sustainable Grassland Management
	VM0042 - Improved Agricultural Land Management	Soil organic carbon sequestration	<b>CCP-Approved</b>	Regenerative Agriculture <b>OR</b> Sustainable Grassland Management
	VM0051 – Improved Management in Rice Production	Methane reduction / Alternate wetting & drying (AWD)	<i>Assessment in progress</i>	Rice Cultivation
	AMS-III.AU (now inactive)	Methane reduction / Alternate wetting & drying (AWD)	Not assessed – methodology inactive	Rice Cultivation
Gold Standard	GS Soil Organic Carbon Framework Methodology	Soil organic carbon sequestration	Not yet assessed	Regenerative Agriculture
	Methane Emission Reduction by Adjusted Water Management Practice in Rice Cultivation	Methane reduction / Alternate wetting & drying (AWD)	<i>Assessment in progress</i>	Rice Cultivation
	AMS-III.AU	Methane reduction / Alternate wetting & drying (AWD)	Not yet assessed	Rice Cultivation
ACR	N2O reductions from fertilizer management (now inactive)	Nitrous oxide reduction from fertilizer use, improved agri practices	Not yet assessed	<i>Not mapped; insufficient market pricing data for this subtype</i>
	Avoided Conversion of Grasslands and Shrublands to Crop Production (now inactive)	Avoided soil carbon loss from grassland conversion	Not assessed – methodology inactive	Sustainable Grassland Management
Climate Action Reserve (CAR)	CAR U.S. Soil Enrichment Protocol (SEP)	Soil organic carbon sequestration	<b>CCP-Approved</b>	Regenerative Agriculture
	Nitrogen Management Protocol	Nitrous oxide reduction from fertilizer use, improved agri practices	Not yet assessed	<i>Not mapped; insufficient market pricing data for this subtype</i>
	U.S. Rice Cultivation Protocol	Methane reduction / Alternate wetting & drying (AWD)	Not yet assessed	Rice Cultivation
	Avoided Grassland Conversion - Version 1.0 (since superseded by v2.2)	Avoided soil carbon loss from grassland conversion	Not yet assessed	Sustainable Grassland Management
ACCU (Australian Carbon Credit Unit)	Estimating soil organic carbon sequestration using measurement and models method	Soil organic carbon sequestration	Not yet assessed	Regenerative Agriculture
SOCIALCARBON	SCM0005	Soil organic carbon sequestration	Not yet assessed	Regenerative Agriculture

## APPENDIX F – PROJECT LEVEL PRICING DRIVERS: METHODOLOGY STRINGENCY AND THIRD-PARTY RATINGS

The following analysis focuses on methodological drivers of price differences across projects globally. For the purposes of this analysis, methodologies are categorised as stringent and non-stringent, to compare those which adopt more conservative and dynamic approaches across key integrity considerations with those that do not, as explained in

section 3.1. Stringent methodologies include VM0042, CAR SEP, VM0051, and GS AWD. Given VM0042's applicability to both regenerative agriculture project types and sustainable grassland management project types, the analysis groups the two subtypes.

**Chart 10. Price comparison across stringent and non-stringent methodologies by project subtype**



The comparative analysis of stringent versus non-stringent methodologies shows that the pricing impact of methodology stringency is segment dependent.

Within regenerative agriculture and sustainable grassland management, stringent methodologies command a clear structural premium over non-stringent methodologies. Stringent approaches show a median price of \$31/t and an average price of \$38.39/t, materially above the non-stringent median of \$7/t and average of \$10.88/t. The distributional separation is also pronounced, with minimal overlap between interquartile ranges. This suggests that, for these activity types, buyers do appear to differentiate and reward methodological features associated with higher integrity, such as more robust additionality tests and the incorporation of dynamic baselines. The lack of meaningful interquartile overlap strengthens the conclusion that this is not an outlier-driven effect, but a structural pricing distinction.

In rice cultivation, however, no consistent premium is observed for stringent methodologies. The result is not conclusive as the stringent dataset is predominantly composed of Indian projects, potentially carrying the India-specific discount, while the non-stringent comparator is skewed by a single higher-priced project in Pakistan. The finding reflects a data limitation rather than a market verdict, and warrants revisiting as coverage expands. Therefore, results suggest that the methodology stringency could be interpreted as a meaningful pricing driver in regenerative agriculture only. This reinforces the broader conclusion that

integrity-linked pricing signals are strongest in segments where buyers appear to better understand, evaluate, and reward methodological rigor in regenerative agriculture and sustainable grassland management, but are not yet a reliably observable premium factor in rice cultivation. For commercial positioning, this implies that adopting a more stringent methodology is most likely to translate into pricing upside where the market already recognises methodological integrity as a differentiated quality signal.

### **THIRD-PARTY RATINGS**

At the project level, in addition to methodological approach, third-party ratings have emerged as a significant factor affecting project demand, buyer decision-making and price premiums in the VCM. In the agri-carbon space, a limited number of projects have been rated by third-party ratings agencies. With fewer than 20% of projects in the dataset carrying a third-party rating, and significant variation across geography, subtype, and methodology, the current dataset does not support a statistically robust assessment of the relationship between ratings and price. This relationship can be revisited in future as the number of rated agri-carbon projects in the market increases.

At present, ratings should therefore be treated as a potentially relevant qualitative signal, but not yet as a reliably quantifiable driver of pricing within this dataset. Their role may become more important over time as market coverage expands and buyer use of ratings becomes more standardised.

## **APPENDIX G – SENSITIVITY ANALYSIS**

The sensitivity analysis below keeps the tax trajectory constant at the assumed rate for each scenario and models two parameters – India's share of SG ICC demand and the SG

ICC allowance rate – to examine how the cumulative market value changes. The shaded cell in each block marks the primary scenario assumption.

Table 14. Sensitivity analysis – India agri-carbon SG ICC market value (Bear/Base/Bull scenarios)

Sensitivity Analysis: India agri-carbon market value (US\$ million, cumulative 2026-2030)	BEAR SCENARIO				
	Bear Scenario Price: S\$45/t in 2026-2027 to S\$50/t in 2028-2030				
India share ↓ / SG ICC allowance % →	5%	7.5%	10%	15%	20%
5%	50.22	59.24	68.26	86.31	104.36
7.5%	75.33	88.86	102.40	129.47	156.54
10%	100.44	118.48	136.53	172.62	208.72
15%	150.65	177.72	204.79	258.93	313.08
20%	200.87	236.96	273.06	345.25	417.43
25%	251.09	296.21	341.32	431.56	521.79
30%	301.31	355.45	409.59	517.87	626.15
40%	401.74	473.93	546.12	690.49	834.87
50%	502.18	592.41	682.65	863.11	1043.58

Sensitivity Analysis: India agri-carbon market value (US\$ million, cumulative 2026-2030)	BASE SCENARIO				
	Base Scenario Price: S\$45/t in 2026-2027 to S\$55/t in 2028-2030				
India share ↓ / SG ICC allowance % →	5%	7.5%	10%	15%	20%
5%	53.09	62.80	72.52	91.95	111.38
7.5%	79.63	94.20	108.77	137.92	167.06
10%	106.17	125.60	145.03	183.89	222.75
15%	159.26	188.40	217.55	275.84	334.13
20%	212.35	251.21	290.06	367.78	445.50
25%	265.43	314.01	362.58	459.73	556.88
30%	318.52	376.81	435.10	551.67	668.25
40%	424.69	502.41	580.13	735.57	891.00
50%	530.87	628.01	725.16	919.46	1113.75

Sensitivity Analysis: India agri-carbon market value (US\$ million, cumulative 2026-2030)	BULL SCENARIO				
	Bull Scenario Price: S\$45/t in 2026-2027 to S\$80/t in 2028-2030				
India share ↓ / SG ICC allowance % →	5%	7.5%	10%	15%	20%
5%	67.43	80.60	93.77	120.12	146.46
7.5%	101.15	120.90	140.66	180.17	219.69
10%	134.86	161.21	187.55	240.23	292.92
15%	202.30	241.81	281.32	360.35	439.38
20%	269.73	322.41	375.10	480.47	585.84
25%	337.16	403.02	468.87	600.58	732.29
30%	404.59	483.62	562.65	720.70	878.75
40%	539.46	644.83	750.20	960.93	1171.67
50%	674.32	806.03	937.74	1201.17	1464.59

Note: All values expressed in 2026 USD; no inflation adjustment has been applied. Exchange rate assumed at USD/SGD 1.35.

BLANK PAGE

